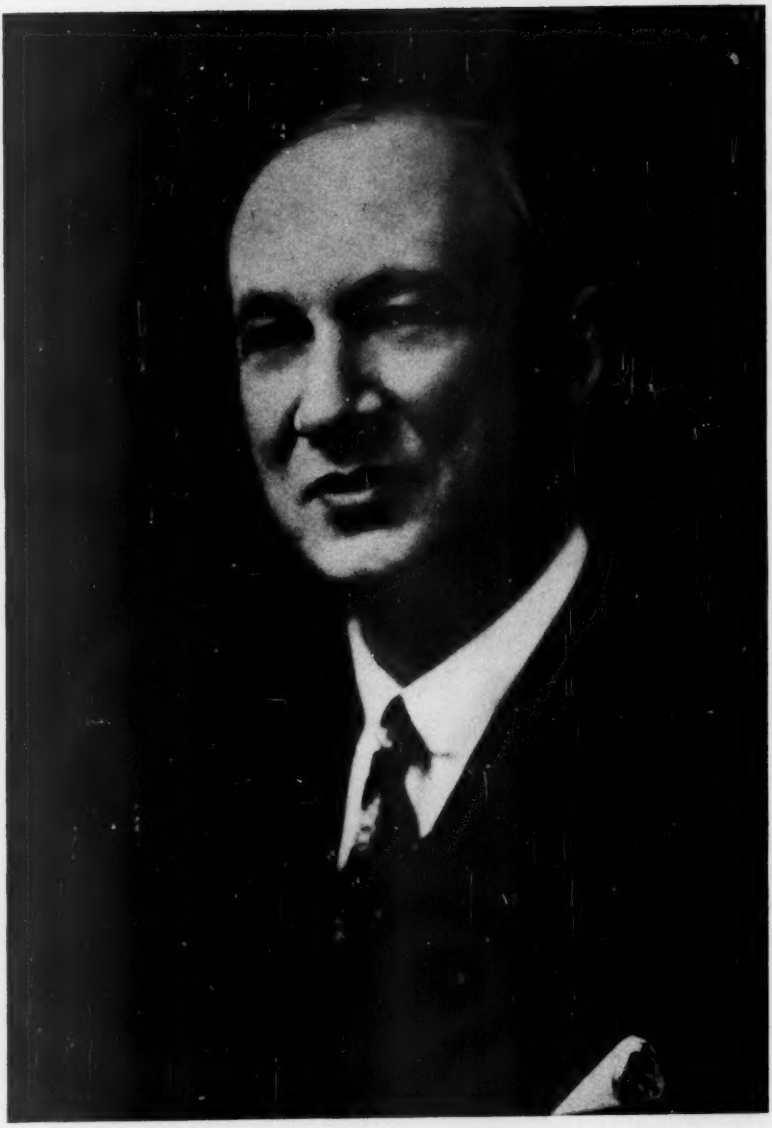

Dr. Irvin Abell

President of The Southeastern Surgical Congress, 1941

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THE RICHMOND SURGICAL ASSEMBLY

The Southeastern Surgical Congress will convene in Richmond, Virginia on Monday, March 10, 11 and 12, for a three-day session. Richmond as a city is replete with historic interest and possesses a charm all its own, assuring those in attendance upon the meeting of congenial and inspiring surroundings. This, the twelfth annual assembly of the Congress, is another milestone on the educational path it has chosen to follow. The greatest asset possessed by the medical profession is the constantly accumulating fund of knowledge in the minds, in the literature, and in the tradition of its members. The responsibility for the acquisition of this lore rests solely on the profession: its dissemination, while participated in to some degree by a few worthwhile lay bodies, is also a responsibility of the profession. A potent means of accomplishing this purpose lies in graduate assemblies in which are discussed the newer thoughts and concepts, the discoveries, the improvements in technic and treatment, and the confirmation of methods which have been tested in the crucible of experience. Doctors attend these meetings with one objective, that of improving their ability to render good service. They find their remuneration in a consciousness of service, in the approval of their confreres, in the gratification of their scientific curiosity and in the satisfaction that comes from participation in the addition to the common fund of knowledge from which all may draw. The list of those who are to lead the discussions at the coming session of The Southeastern Surgical Congress is a sufficient guarantee that these will be replete with information in reviewing the newer ideas in surgery and its related fields, serving as a refresher course to those whose interest lies in this sphere. The officers of the Congress urge upon its members the advisability of their attendance and extend to such physicians as may be interested a cordial invitation to be present.

IRVIN ABELL, M. D.
President

SURGICAL CORRECTION OF OLIGOMENORRHEA, MENORRHAGIA AND MENOPAUSE BY OVARIAN ISOPLASTISM

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MORRIS[1] performed the first human ovarian transplant in 1895 by suturing ovarian tissue into the stump of a fallopian tube. A review of the literature suggested that lasting results could be obtained if the transplanted ovarian tissue received its normal blood and nerve supply[2, 3, 4]. This means the donor and recipient should be of the same blood groups and the transplanted ovary should be implanted in its natural site on the hilum of a previously resected ovary.

To obtain a donation of one ovary from a normal person for transplantation in a patient suffering from ovarian deficiency is unsatisfactory from the physiologic aspect of the donor, and impractical clinically.

One of us (Bennett) conceived the idea of an exchange of ovarian grafts between two women suffering from contrasting types of ovarian dysfunction. A woman with menorrhagia due to follicular cystosis should exchange grafts with a woman who shows follicular deficiency with amenorrhea or oligomenorrhea. The next important step was the idea of removing only about three-fourths of each ovary at the time of exchange so that each graft could be implanted on the hilum of the recipient and receive its proper blood and nerve supply[5].

The first exchange of ovaries was performed by Bennett in February 1935 on each of two sisters; one of whom had menorrhagia and the other amenorrhea, both of functional origin. The improvement was so marked in each case that he felt justified in applying it to other patients suffering from similar ovarian disturbances.

The proper selection and cross-matching of the operative cases was possible only after a two to eighty-four month study which included blood grouping, blood chemistries, biologic assays[6, 7, 10, 11], and vaginal smears[8, 9].

One type of ovarian isoplast is an abdominal operation which interchanges a portion of one ovary from each of two patients.

Dr. Russell started collaborating with Dr. Bennett in May 1940 and is on leave of absence from the University of Tennessee.

TABLE 1.

Surgical Correction of Oligomenorrhea, Menorrhagia and Menopause by Ovarian Isoplastism.

MENORRHAGICS

(Hypermenorrheas)

(Hypo-interstitial Ovaries)

Case No.	Hosp. No.	Year of Oper.	Age	Cycle in days		Duration in days		Amount of flow		Weight	
				B	A	B	A	B	A	B	A
1	31	1935	14	20	32	Cont.	4	Ex.	Mod.	126	130
2	12321	1936	21	28	0	7	0	Norm.	0	122	122
3	17960	1937	12	30	31	Cont.	4	Ex.	Mod.	85	115
4	44518	1938	28	26	28	10	0	Ex.	0	116	124
5	44520	1938	25	21	30	17	5	Ex.	Mod.	88	114
6	1396	1939	37	20	32	14	5	Ex.	Mod.	111	108
7	1930	1939	32	26	32	12	7	Ex.	Mod.	140	124
8	1852	1939	39	28	28	14	3-4	Ex.	Mod.	135	124
9	1888	1939	19	20	31	14	4	Ex.	Mod.	107	112
10	1928	1939	34	14	30	14	5	Ex.	Mod.	170	162
11	621	1939	14	18	31	8	5	Ex.	Mod.	97	109
12	599	1939	23	21	31	8	3	Ex.	Mod.	127	123
13	590	1939	19	21	31	14	5	Ex.	Mod.	103	120
14	1115	1939	38	20	35	15	5	Ex.	Mod.	130	128
15	1482	1939	34	28	32	12	5	Ex.	Mod.	135	137
16	1481	1939	34	28	32	8	4	Ex.	Mod.	101	107
17	1617	1939	19	28	31	7	4	Ex.	Mod.	82	90
18	1729	1940	38	21	28	9	4	Ex.	Mod.	118	116
19	1824	1940	40	14	29	14	5	Ex.	Mod.	106	112
20	1639	1940	39	21	28	9	4	Ex.	Mod.	120	136

B—Before Operation

A—After Operation (eight months to five years)

Case No. 2—Operation: Appendectomy, suspension and resection of simple ovarian cyst. Gave portion of ovary but received none.

Case No. 4—Operation: Fibrosis uteri and simple ovarian cyst.

Another is one in which the patient is the recipient only. While the first type of isoplast is in progress, a portion of ovarian tissue is placed in a jar containing normal physiologic salt solution and left at body heat, until the castrate patient is prepared for her isoplast[5].

Ovarian Classification

The following classification was evolved in 1935 after studying a large series of case histories and mounted tissues taken from patients who were operated upon because of an ovarian complication. The laboratory material was from all portions of the female genital tracts. All patients have been indexed and classed accordingly.

I Hyper-interstitial (hypofollicular or hypomenorrhea)
- A. Inherited (fig. I 1)
  1. Excessive mesenchymal infiltration.
  2. Hypoplasia
- B. Acquired (menopause) (fig. II 1)
  1. Physiologic

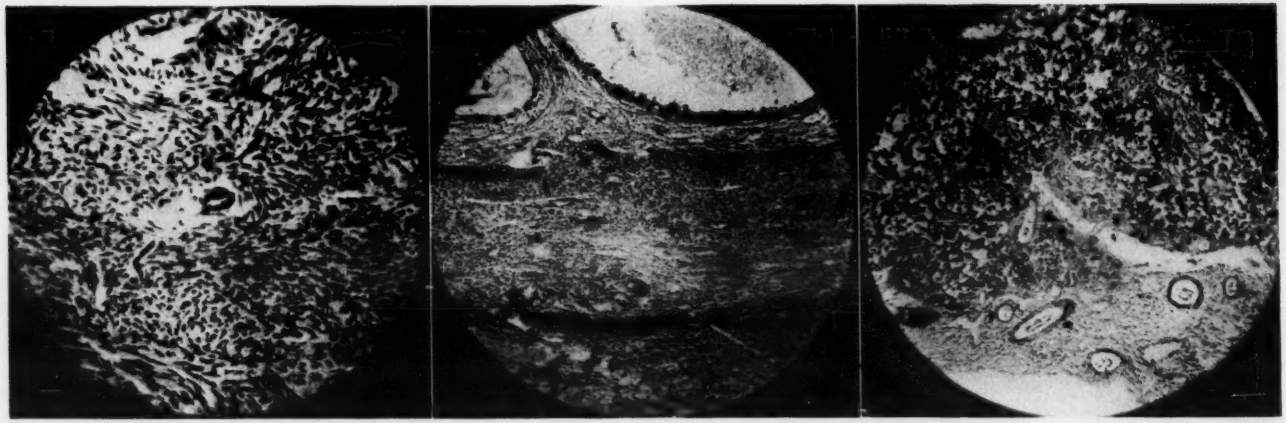
II Hypo-interstitial (hyperfollicular or hypermenorrhea)
- A. Inherited (fig. III 1, 3)
  1. Deficient mesenchymal infiltration.
  2. Large atretic follicles.

Technic

In adjoining operating rooms, the patients are catheterized, prepared and draped. An ample suprapubic midline abdominal incision is made and the layers of tissue are dissected anatomically until the peritoneum is reached. The severed vessels are clamped and ligated with No. 00 plain catgut. The peritoneum is opened and the abdominal viscera are explored. An ovary is brought into the field of operation. The hypo-interstitial and hyper-interstitial ovaries are resected simultaneously at the hilum, employing no hemostasis. The resected portions are submerged into warm physiologic saline solution, transported to the recipients and the exchanges are executed. The peritoneal layer of each stump is coapted to that of the transported portion by means of a continuous single, No. 00, chromic, catgut suture on an atraumatic needle (fig. IV). The blanched appearance of the transplanted tissue becomes a normal pink almost immediately. The abdominal incisions are closed anatomically. No appendectomy is performed unless there is some disease evident because of the desire to eliminate all possible sources of contamination.

Discussion

An ovarian isoplast is considered only if other therapy has failed to cause the ovary to exhibit the criteria characterizing normal



1. Isoplast (right 5/19/39) 2. Right Ovary (3/30/40) 3. Left Ovary (3/30/40)

FIGURE I.

Surgical Correction of Oligomenorrhea, Menorrhagia and Menopause by Ovarian Isoplastism.

VIABILITY OF ISOPLASTS

Case No. 7 in Table 2 (Photomicrographs x 300) Cesarean Section 10 Months After Isoplast

1. Gross Pathology: Ovaries containing corpora luteal bodies. No adhesions. Uterus slightly hypoplastic.

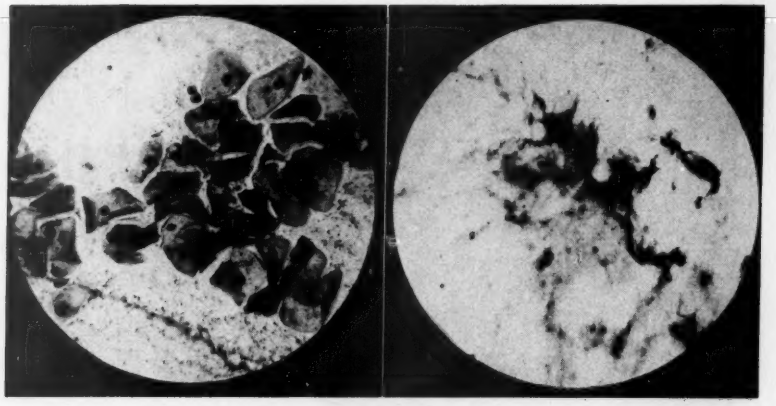
Pathologic Report: Small section of ovarian stroma containing no follicles, showing no evidence of the ovulation system.

2. Gross Pathology: Scar discernible around hilum. Uterus and tubes normal. Abdominal viscera normal.

Pathologic Report: Stroma contains some large and many immature follicles. Hyalinized connective tissue adjacent to scar tissue running across one side.

3. Gross Pathology: Ovaries normal. Corpora lutea in left ovary.

Pathologic Report: Increased fibrous tissue. Scanty atretic graafian follicles. Corpus luteum diffuse, irregular cell arrangement and nuclear patterns.



1. Before Operation (11/14/38) 2. 22 months later (9/14/40)

FIGURE II.

MENOPAUSE

Case No. 9 in Table 2 (Photomicrographs x 300)

VAGINAL SMEARS							
					Epithelial Cells		Ovarian
Estrone	Dysm.	Bacteria	RBC	WBC	Cytoplasm	Nucleus	Stimulation
1. Negative	None.	None.	None.	None.	Not grouped. Agranular. Cornified. Edges irregular, twisted and folded.	Large, ovoid and stain orange.	Atrophy of menopause.
2. Positive	None.	Occ. gram cocci.	Many. Some young forms as in menses.	Occ. poly.	Superficial and intermediary layers. Regular outline. Coarse granules. Occ. groups. Moderate or non-cornified.	Ovoid and gram—with occ. gram coarse granules.	Follicular (normal menses)

ovarian functions[12]. In selecting suitable partners for an isograft, the requirements are:

1. The patients belong to the same blood group and are cross-matched.
2. The characteristics of their ovarian dysfunction must be complementary and to the same degree.
3. The tissues must be free of any transferable disease.

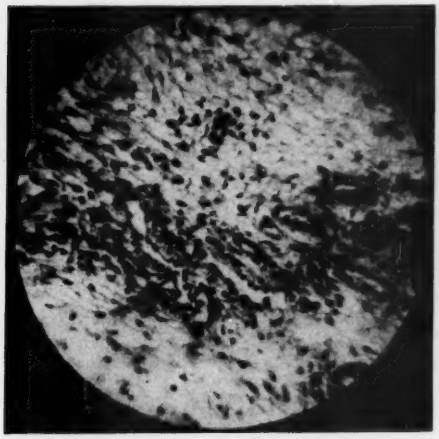


FIGURE II, 3.

SECTION OF OVARY.

Gross Pathology: Hyperfollicular atretic cysts of ovaries. Pathology Report: Ovarian tissue shows atresia of Graafian follicle and cystic corpus luteum.

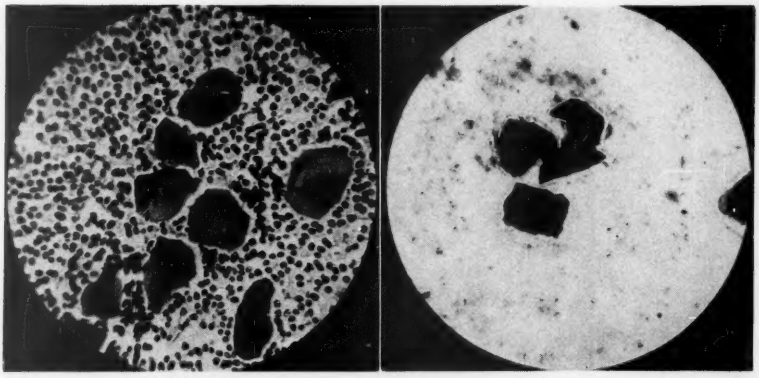
The first, most important step was to prove that an ovarian graft could survive because all hormonal studies were suggestive but not conclusive.

The opportunity to offer visual proof came when one of the patients, who had taken part in an exchange of ovarian tissue, became pregnant. A cesarean section was performed when she reached term and both ovaries were carefully photographed, and a living graft was easily demonstrable. By good fortune, this patient's first operation had been photographed by means of motion pictures in color and it was easy to demonstrate the original exchange of ovarian tissue compared to the appearance of the grafted ovary ten months later (fig. I, 2).

We believe that this is why the uncorrected percentage of failures in this series is only 0.8, with no deaths as the result of the isoplasts. A total of 80 isoplasts have been performed to date, with one partial failure.

No patient has required hormonal medication to supplement the operation. Vaginal smear studies are made daily, before and after the operations, in order to study the objective and subjective results of ovarian isoplast operations. We are summarizing 40 of the cases.

Those of the menorrhagic type had an average menstrual cycle of 22 days, with an excessive flow for 12 days, but changed to an



1. Before Operation (8/10/38) 2. Eleven months later (7/18/39)

FIGURE III.

Case No. 9 of the Hypermenorrheas (Photomicrographs x 300)

	VAGINAL SMEARS							
						Epithelial Cells		Ovarian
	Estrone	Dysm.	Bacteria	RBC	WBC	Cytoplasm	Nuclei	Stimulation
1.	Strong pos.	Much.	Gram-cocci not in groups.	Many	Many large poly.	Many. Grouping. Superficial layer. Granular. Outline well defined. Non-cornified.	Small. Oval or round.	Strong follicular. (menstrum)
2.	Weak pos.	None.	Clusters of gram-cocci.	Very few.	Occ. poly. Type with menses.	Interme-diary layer. Slightly granular. Moderately cornified.	Small and oval. Some granules.	Slight follicular (early menses)

average cycle of 30 days with a moderate flow lasting 4 days (fig. V).

The average menstrual cycle in the oligomenorrheics was 35 days with a scant flow lasting 1½ days previous to the operation but changed to an average cycle of 29 days with a moderate flow lasting 4½ days (table 2).

The postoperative change in the weight of these individuals is of interest. Twelve menorrhagic patients were underweight with an average of 105.7 pounds, but gained an average of 10.7 pounds shortly after the operation. Nine menorrhagic patients were overweight with an average of 132.7 pounds but they lost an average of 7.7 pounds after the operation.

TABLE 2.

Surgical Correction of Oligomenorrhea, Menorrhagia and Menopause by Ovarian Isoplastism.

OLIGOMENORRHICS

(Hyper-interstitial Ovaries)

Case No.	Hosp. No.	Year of Oper.	Age	Cycle in days		Duration in days		Amount of flow		Weight	
				B	A	B	A	B	A	B	A
1	2830	1935	25	0	31	0	4	0	Mod.	212	124
2	24116	1936	28	0	30	0	5	0	Spot.	89	134
3	20723	1937	29	28	30	3	4	Spot.	Sl.	153	130
4	44519	1938	49	0	28	0	4	0	Spot.	89	112
5	44521	1938	30	90	28	2	5	Spot.	Mod.	146	126
6	1395	1939	21	31	30	5	7	Mod.	Mod.	124	126
7	1929	1939	30	40	28	3	7	Spot.	Mod.	93	120
8	1855	1939	35	179	30	4	3	Spot.	Spot.	107	114
9	1889	1939	48	0	31	0	3	0	Sl.	88	109
10	1931	1939	43	0	30	0	4	0	Spot.	88	109
11	620	1939	26	60	28	1½	5	Spot.	Mod.	254	240
12	595	1939	33	60	31	2	4	Spot.	Mod.	149	139
13	598	1939	21	30	28	3	5	Spot.	Mod.	121	125
14	1114	1939	37	0	30	0	3	0	Spot.	145	124
15	1480	1939	38	0	31	0	3	0	Spot.	91	116
16	1499	1939	20	34	28	1	5	Spot.	Mod.	165	150
17	1618	1939	23	56	28	2	7	Scant.	Mod.	88½	95
18	1740	1940	40	60	30	2	5	Spot.	Mod.	160	148
19	1842	1940	15	30	30	1	4	Spot.	Mod.	94	100
20	1642	1940	35	30	28	4	4	Scant.	Mod.	120	124

B—Before Operation
A—After Operation (eight months to five years)
Previous Operations: Cases 2, 9, 14, 15—Subtotal hysterectomy and bilateral castration.
Case No. 2—Operation: Supravaginal amputation for fibrosis uteri. Received portion of ovary but gave none.

More marked weight changes were exhibited by the oligomenorrheic group after the operations. Nine overweight patients averaging 158.7 pounds lost an average of 23.4 pounds. Eleven of this group were underweight and averaged 96 pounds, but gained an average of 18.4 pounds shortly after their isoplast.

Cases 5 and 8 in table 1 and cases 7, 13 and 17 in table 2 were sterile from 1 to 15 years according to their histories but have be-

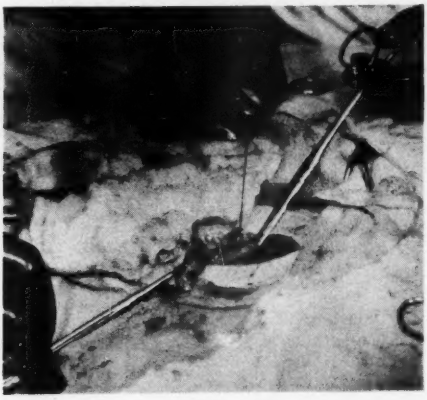


Fig. IV. Appearance of isograft after suturing in situ.

come pregnant since the isoplast operation. These five patients have been married once only.

Space does not permit a detailed table of each case, but a former menorrhagic and one physiologic menopausic have been selected to demonstrate the typical changes which occur. The photomicrographs exemplify the classical findings which are constant and uniform (fig. II, 2 and III, 2).

Summary

Figure 1 demonstrates the viability of the transplanted ovarian tissue.

Many conditions have been improved or corrected as the result of this operation, as shown by the cases listed. Some of the patients were suffering with epilepsy, catatonia, dementia praecox, or a manic depressive condition. A discussion of these patients will appear in another article at an early date. Of course, there is no panacea for all ailments, but it is our belief that many maladjusted individuals can be helped and a number of lives saved by the proper diagnosis arising from an endocrinal study of such patients. An

ovarian isoplast operation is indicated at a later date, if other therapy fails. The transplant may activate the ovaries even if atrophy occurs as the result of trauma to the ovarian blood supply. No patient received an isograft unless all parties concerned agreed to the operation.

Conclusions

1. A thorough study of the endocrine systems must be made before therapy is instituted.

2. An ovarian isoplast is indicated in those patients with primary ovarian dysfunction, who do not respond to medication.

3. An exchange of isografts is indicated when the ovarian dysfunctions are complementary to each other.

4. If permanent results are to be obtained, patients must be cross-matched and the grafted tissue must resume its physiologic functions.

5. Metabolic unbalance caused by ovarian dysfunction improves following an ovarian isoplast.

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HORMONES INTERPRETED QUANTITATIVELY

Cyclic Variations of Some

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THE diagnosis of dyscrinisms has long been a problem to the clinician because of the complexity of the endocrine system. All too often uniglandular disorders have been considered as entities. The following evidence suggests that the interrelationships of glandular influence can be demonstrated even when neoplasms are present in the units of the endocrine system.

In the course of intensive study of the ovaries, vaginal smears[1] demonstrated the cyclic changes which occur in the vaginal mucosa, and these became criteria for the diagnosis of ovarian behavior. The changes led to a hypothesis that the pituitary, liver, thyroid, suprarenal and pancreas might exhibit a related rhythmic cycle. Accordingly, the following clinical tests were instituted.

LABORATORY METHODS

Estrogen: Extraction by the Frank and Goldberger method[2] with the following exceptions; 150 c.c. of anhydrous ether are used and then filtered with the sludge through a No. 40 Whitman paper. The filtrate is evaporated and the residue containing the estrogen is calculated according to the method of Neustadt[3].

Androgen: Determination by Neustadt's technic[3] from urine and blood.

Thyroxin-iodine: The basal rate of the fasting and rested patient is used in studying the activity of the thyroid gland. The micrograms of thyroxin-iodine per 100 c.c. of blood are calculated by McClendon, Foster and Kirkland's technic[4].

Prolan: Estimated from the urine as suggested by Zondek and Van Eweyk[5].

Dr. Russell, on leave from the University of Tennessee, started collaborating with Dr. Bennett in May, 1940.

Urinary Cholesterol: Estimated as suggested by Sobotka and Bloch[6].

In addition, the following procedures were used:

Kolmer and Boerner's method[7] for the study of the pancreas.
Goldzieher's[8] "specific dynamic action" test.
Bennett and Russell's method[9] of vaginal smear studies.

The above tests were made upon each patient at weekly intervals for four weeks. The study of vaginal smears established the chronology of the menstrual cycle definitely.

Discussion

Certain data from all of the nubile females were averaged (fig. 1-a) and plotted with time as the abscissae and hormonal values as the ordinates. The same was done with data obtained from menopausic females (fig. 1-b). In addition, patients were classified in accordance with the endocrine data obtained from these tests and the averages for each of the selected groups plotted in graphs. In an attempt to establish a "normal" average, data were obtained from 21 nubile females who were in good health and who complained of no symptoms directly attributable to an endocrine origin (fig. 1-c, d, e).

However, in classifying patients in accordance with the test data it was necessary to establish more or less arbitrary limits separating those considered "normal" from those designated as exhibiting "hyper" or "hypo" activity of a gland. And by these standards it was discovered that many of the control group of "asymptomatics" presented many instances of apparent abnormality, (48 per cent fell under the classification of hypothyrotics, 5 per cent were hyperthyrotics and 33 per cent gave "abnormal" results in the "specific dynamic action" test). Only 3 of the 21 asymptomatics were strictly normal.

Explanation of Graphs

The upper row of graphs, labeled "Thyroid," represents the average value of the basal metabolic rate from rested and fasting patients of each classification and indicates the relative variations in the amount of thyroxin-iodine present.

The second row of graphs, labeled "Pituitary," represents the average values in basal metabolic rate units obtained in the "specific dynamic action" test.

The third row of graphs, labeled "Estrogen," represents the average values of the specific quantities of estrogen found.

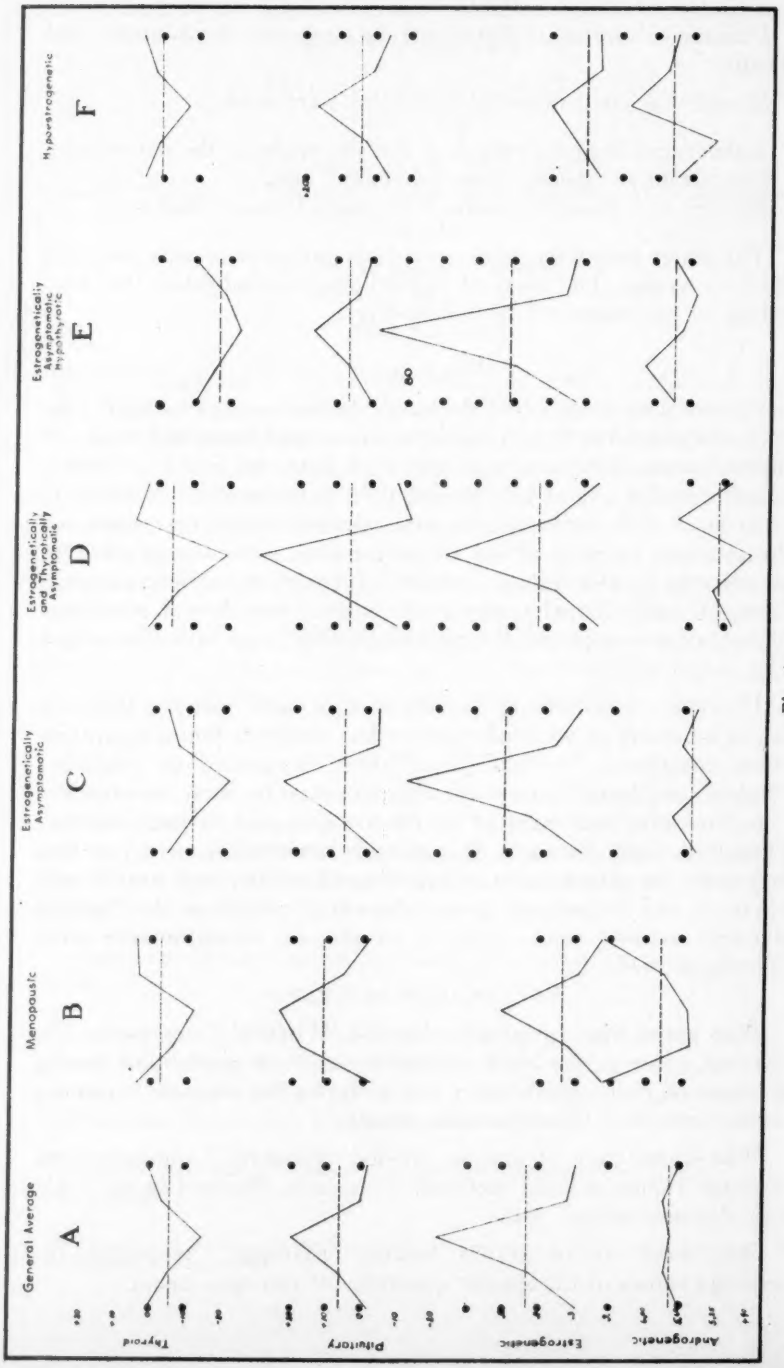
General Average
A
Menopausic
B
Estrogenetically Asymptomatic
C
Estrogenetically, Organically Asymptomatic
D
Estrogenetically Asymptomatic Hypothyroic
E
Hypoestrogenetic
F
Thyroid
Pituitary
Estrogenetic
Androgenetic

Fig. 1

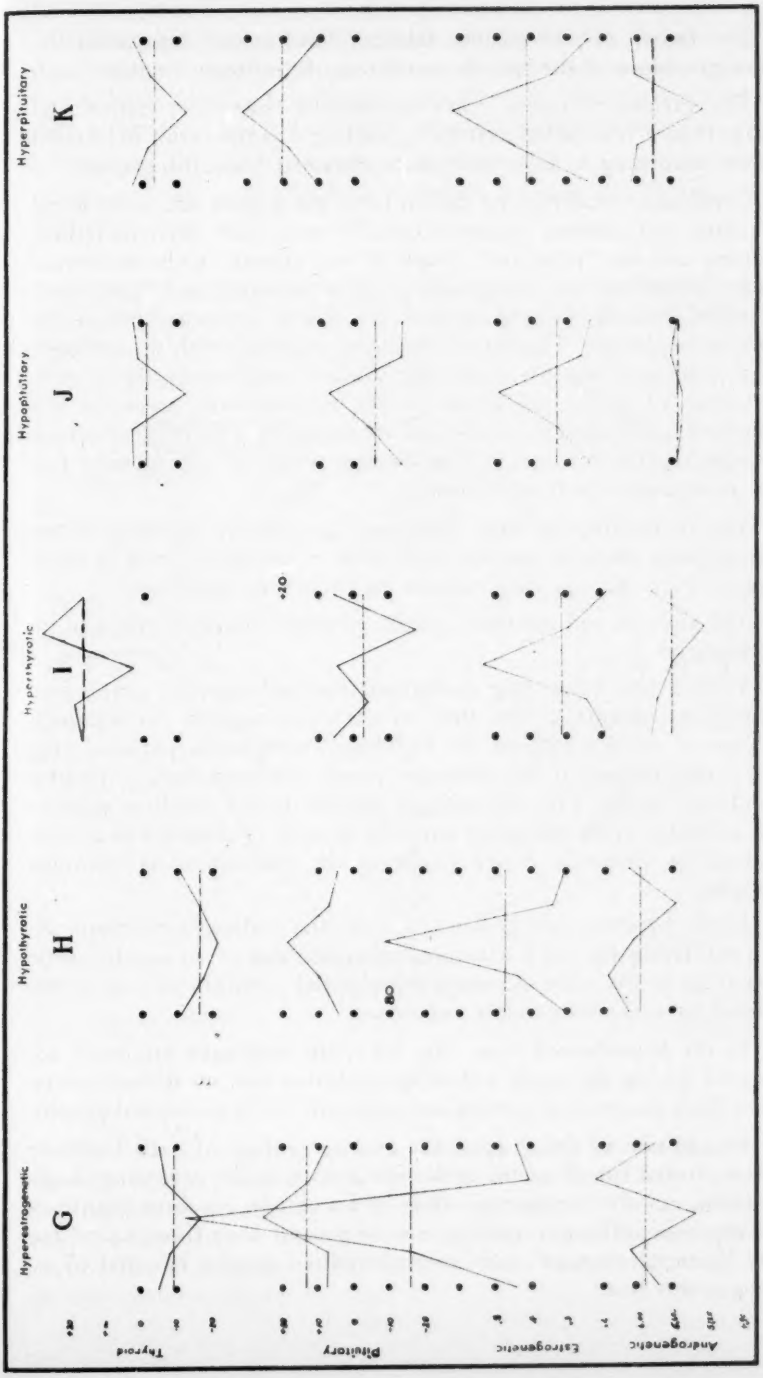

Fig. 1 Continued

The fourth row of graphs, labeled "Androgen," represents the average values of the specific quantities of androgen found.

The various endocrine types represented require no explanation other than a reiteration that this grouping was the result of classification according to laboratory data obtained from the patient.

Conclusions that may be drawn from the graphs are as follows: maxima and minima values normally occur for thyroxin-iodine, estrone and the "pituitary" graph at two periods in the menstrual cycle: ovulation and menstruation. The estrogen and "pituitary" maxima, and the thyroid minima are clearly demonstrable at the time of ovulation. The thyroid maxima, together with the estrogen and "pituitary" minima occur with almost equal regularity at menstruation. Usually, the action of the andro-genetic factor is less conclusive, although there are definite indications that the minimum amount of this hormone will be present when the estrogenetic factor is at a maximum (ovulation).

The thyroxin-iodine and "pituitary" graphs are opposing to approximately the same degree at the time of ovulation, even in those cases where the statistics indicate an endocrine unbalance.

The thyroid and estrogen graphs generally move in opposite directions.

With a few interesting exceptions, the androgenetic graph presented its minima at the time of estrogen maxima (ovulation). However, in the menopausic and hypo-estrogenetic patients (fig. 1-f), the minima of the androgen graph occurred during the preovulatory week. The concomitant increase in the absolute quantity of androgen from this point until the time of ovulation was accompanied by distinctly lower peaks in the corresponding estrogen graphs.

In the hyperthyroid group (fig. 1-i), the androgen minimum occurred during the week *after* ovulation and was of an anachronistic behavior in the corresponding thyroid and pituitary curves, exemplified by a thyroxin-iodine maximum.

In the hypothyroid class (fig. 1-h), the androgen minimum appeared during the week following ovulation and no distinct variation from the general pattern was apparent in the associated graphs.

In addition to the graphs, the *average* values of each hormone were plotted for all of the endocrine groups in the preceding classification. In the menopausic class, the average absolute quantities of thyroxin-iodine and androgen were greater than those found for the "general average" and "asymptomatic" graphs, but that of estrogen was less.

The hypo-estrogens exhibited more thyroxin-iodine and androgen than the two reference groups. Also, the hyperestrogens (fig. 1-g) had a higher level of androgen, but they had less thyroxin-iodine than either the "general average" or the "asymptomatics."

The hypothyroid patients had more estrogen than the reference groups as well as the highest androgen average of all the cases studied.

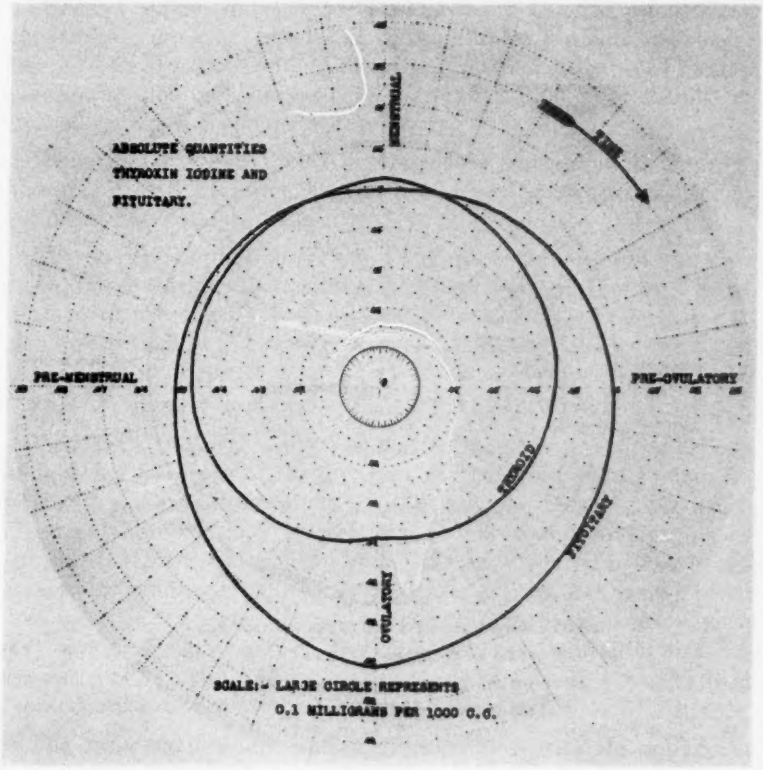

Fig. 2

The endocrine graphs and the average levels of the hormones showed that the greatest variations occur in the hyperthyroid group. In addition to possessing the greatest quantity of thyroxin-iodine, these patients had a lower level of estrogen than the menopausic cases. The androgen was the only hormonal level that could not be considered extreme.

The hypopituitary group (fig. 1-j) was marked by a comparatively high thyroid and a low estrogen level with a median androgen average. The androgen graph for these cases presented only minute variations throughout the menstrual cycle.

The hyperpituitary patients (fig. 1-k) exhibited median levels for their thyroid and estrogen activities. Their androgen levels were median but the graph of this hormone indicated two distinct phases.

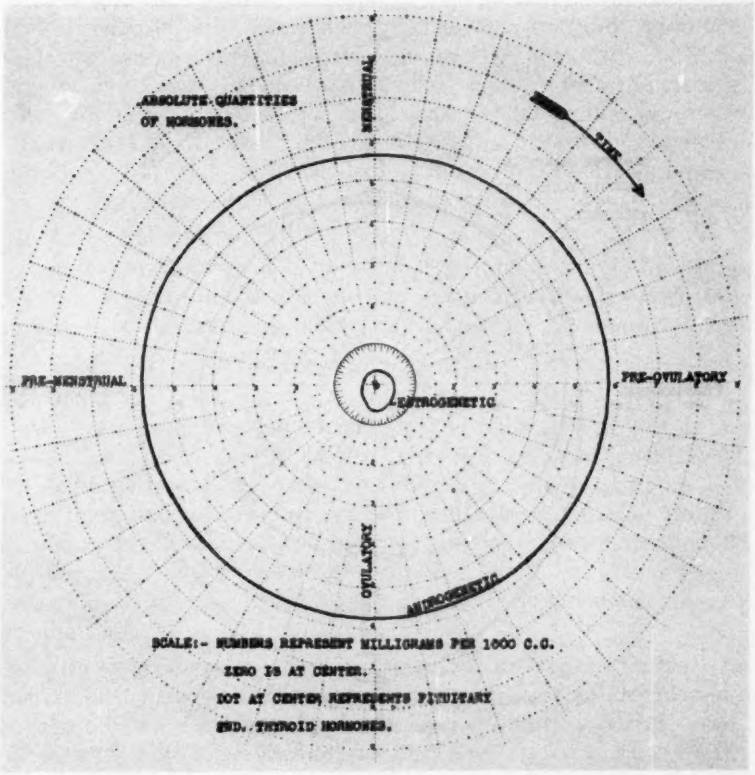

Fig. 3

During the week prior to, and immediately following menstruation, the quantity of androgen was practically constant, but during the week before and the week following menstruation, the amount of androgen dropped sharply to a minimum at the time of ovulation and soon rose abruptly to its previous level.

Absolute quantities of the hormones under consideration were plotted by using circular coordinates and from these curves it will

be seen that the average quantity of thyroxin-iodine present was less than that of the other hormones. (fig. 2). The estrogenetic factor indicated the quantity of this hormone to be about eight times as great, while the amount of androgen was over a hundred times as great as the quantity of thyroxin-iodine (fig. 3). These results support a hypothesis that the relative potency of the hormones is approximately proportional to the average quantities present in the body.

The foregoing charts were graphed from data compiled during the autumn months. Similar data from these patients will be reported upon for the winter, spring and summer months. The data concerning the liver, pancreas and the associated biologic chemistries will be considered about the same time.

The "iodine factor" must be taken into consideration from the standpoint of the seasonal variations, as well as the geographic location of the patients' domicile.

We offer this "physiologic curve" as the explanation of the functional curve patterned after the excellent book of Hersey[10] which deals with the functional capacity of individuals. The male patterns were found to be similar to those of the females.

Discussion of the "Pituitary" Graph

Paschkis[11] and others have suggested the existence of a protein metabolism hormone of the pituitary anterior lobe that is non-identical with the growth hormone. We believe that the principle which activates the "specific dynamic action" has its origin within the anterior lobe of the pituitary. While further research will be necessary to substantiate this contention, the graphs we have labeled "pituitary" were plotted in accordance with the values obtained in the "specific dynamic action" test and these results used in classifying patients as hypo or hyperpituitary types. These classifications checked accurately with the symptoms of our patients.

The cyclic changes and the quantity of this principle are represented by the set of curves in the left hand column which has been labeled pituitary. During the prosecution of the above studies, two methods of approach to the function of the pituitary produced results so closely correlated that the following conclusion was made, namely; the "activating principle" of the anterior lobe of the pituitary was at its peak when the prolan was at its lowest ebb, and the prolan peak occurred when the "principle" was at its minimum.

Again, interpreting the reaction of the pituitary to protein by obtaining the metabolic rate before and at one and two hour inter-

vals after the administration of the test meal, along with the extraction of prolan from the urine, we were able to place the pituitary's action on a quantitative basis by using the thyroxin-iodine microgram formula. Our findings in relationship to the quantitative prolan output of the anterior lobe of the pituitary confirm those of Ramos[12].

Conclusions

1. Isolated determinations of glandular functions must be used with caution when diagnosing their cyclic and seasonal variations.

2. A series of tests conducted at weekly intervals for at least a month is necessary as an aid to seasonal diagnosis.

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OBSERVATIONS ON MALIGNANCIES OF THE LARGE BOWEL

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ALL too often one sees patients who, if they had been properly examined in the beginning, could have been relieved permanently. Hasty examination and diagnosis made by intuitive, slipshod methods lead to disaster for the patient and the doctor's reputation as well.

Percentages as to frequency of occurrence will be avoided. Anyone can in his leisure look up statistics. Too often statistics are utilized to prove a particular point of view. Sometimes they are intended to prove how good the individual author is. Everybody likes to write a success story. Few like to tell a sad story.

We hear a great deal about early diagnosis. Do the facts as we find them indicate that the diagnosis of malignancy of the large bowel is often made early enough to do the patient much good?

Recently a letter from a distinguished surgeon said that he "saw few carcinomas of the bowel." His experience is not unusual if he meant to convey the idea of few in the operable stage.

In a recently published paper I made the following statement:

> The problems associated with and demanding a liaison between the internist and surgeon involving the intestinal tract are numerous and varied. There are certain disconcerting facts which cannot be overlooked. All too many patients are presented to the surgeon with cancers of the rectum and large bowel at a stage too late to offer a reasonable hope for permanent surgical relief.
>
> It is an unfortunate fact that some cases are seen for the first time by a surgeon when there are definite manifestations of an almost incomplete, if not complete, obstruction present.
>
> We talk about educating the public. Until we are more cancer-conscious ourselves, and until we think in terms of malignancy when there are changes in bowel habits, when blood is present in the stool, or when there is an unexplained secondary type of anemia, we are not going to succeed with our problem.
>
> Rectal polyps large enough to obstruct the rectal canal and produce marked bleeding are still seen at a time when definite malignant changes are present, and are only presented to the surgeon because of a protruding, bleeding mass from the anus.

In summarizing that paper I stated:

Surgical Clinic presented before the Fulton County Medical Society, Atlanta, Nov. 7, 1940.

The problems which confront us today may be compared to relay races, each participant doing his best up to a certain point, then cheerfully relinquishing the struggle that others may carry on. It becomes increasingly important for us to fix for the guidance of others who are to follow us rational lines of procedure so that our mutual problem, the patient, may obtain that which he seeks, a restoration to health and economic efficiency.

One of the most impressive facts noted in reviewing histories such as those which form the basis for this presentation is that the significance of bloody stools is not duly appreciated. This finding is not always considered of sufficient importance to make the doctor investigate all of the possible causes of bloody stools.

It may seem like one is quibbling about terminology, yet the expression "rectal bleeding" does not signify what one has in mind. If one thinks in terms of blood in stools, he does not point to the rectum directly. It is his duty to investigate the source.

The character of the blood gives one an idea as to whether the source of bleeding is near at hand or whether the quantity being passed is so large and is so rapidly being discharged from the blood vessels at a distance that it comes through the anus as bright red blood. It would seem that one should definitely consider the source of bloody stools as his first duty.

The medical conditions which must be considered are: amebiasis, ulcerative colitis, blood dyscrasias, such as the Banti syndrome, and disturbances of the reticulo-endothelial system, such as thrombocytopenic purpura.

From a surgical standpoint, hemorrhoids, polyps (whether single or associated with a true polyposis of the colon) and carcinoma of the rectum, rectosigmoid or other segments of the colon, must be considered.

In an effort to determine the causative factor it is necessary for the investigator to have complete blood studies made. These should include not only the routine red, leukocyte, and differential counts, but also coagulation time, bleeding time, prothrombin estimation, platelet count and fragility test as well as determination as to whether the clot is retractile or not. The significance of the blood findings can hardly be overestimated. Proper interpretation will either enable one to diagnose, or eliminate, pernicious anemia, purpura hemorrhagica and polycythemia, and it will aid in the diagnosis of Banti's syndrome.

The stool examination will certainly aid us in determining whether we are dealing with dysentery of the bacillary or amebic type.

Just as a warning, I believe it wise for us not to conclude because of the finding of ameba, that the blood in stools is entirely due to amebiasis. We all realize that about 10 per cent of the population of this country have amebiasis. The finding of ameba does not indicate that some other condition may not be associated and be responsible for the hemorrhage from the bowel. The presence of ameba indicates treatment for amebiasis, but does not eliminate an associated condition.

This presentation will consider briefly a few cases of polyposis of the colon, carcinoma of the rectum, transverse colon and ascending colon, splenic anemia (Banti's syndrome) and purpura hemorrhagica.

The outstanding facts will readily be seen. Delayed diagnosis due to failure to examine the patient thoroughly is responsible for most of the errors. Interpretations of a few manifestations particularly of anemia as a primary factor have been responsible for failure in several of the cases. There seems to be no justification for any of these omissions or commissions, and yet we go on. We continue to talk about educating the public. It may be trite, it may be unnecessary, but it cannot be reiterated too often: unless we are cancer-conscious we still fail in our duty to make an early diagnosis at a time when adequate surgery can accomplish something for the unfortunate sufferer.

Polyposis

Case 1.—A woman of 36 had complained for five years of abdominal discomfort, which she described as a "gnawing pain and an empty feeling." She was consoled with the advice that she had anemia and was undergoing change of life.

Three and a half years ago her pain became intense and seemed to be particularly localized in the right lower quadrant of the abdomen. The physician consulted at that time told her that she had a prolapsed ovary, and a secondary anemia. The treatment consisted of liver extract and an operation at which oophorectomy and appendectomy were done. The pathologist reported an adenoma of the appendix. No attention was paid to his report.

In January 1940 she passed large quantities of blood and had her usual upper abdominal cramps. She was given a strict diet and some medication. She continued to pass frank blood and pus in the stool. It was not until August 1940 that she had a proctoscopic examination. This revealed polyposis of the rectum and sigmoid. Operation was refused by the patient at that time.

In September, because of severe abdominal pain, diarrhea, and bloody stools, she returned and colectomy was advised. Because of the presence of large polyps in the rectum and rectosigmoid, it was necessary to advise complete colectomy and permanent ileostomy. The first stage of the operation consisted of a resection of the terminal ileum, cecum, ascending and transverse colon. It was felt that the patient's best interests would be served by doing a second operation at a later stage. At that time it is proposed to remove the

entire descending colon, sigmoid and rectum (an abdominoperineal resection after the Miles plan).

Even though the polyps were extremely small and benign in appearance, a pathologic report showed early carcinomatous changes.

This finding together with a similar finding in the next case give us cause to insist on the importance of the contrast barium enema.

CASE 2.—A man, 55 years of age, had been under observation of an internist for several years because of hypertension. The only illness other than hypertension during the previous seven years was an emergency appendectomy. The presenting symptom (bleeding from the rectum) came on suddenly Nov. 19, 1939. I found a large polypoid mass about the size of a golf ball protruding from the anal orifice. The lesion was tender and soft; it bled easily, and seemed to be friable. The polyp was attached to a long pedicle probably about four inches in length. These facts were obtained in the operating room at which time under a general anesthetic the sphincter was dilated and the base of the polyp sought under direct vision. Clamps were applied to the healthy looking mucous membrane of the rectum and transfixion ligatures were introduced at the base before the growth was removed. A continuous suture was introduced for the purpose of approximating the mucous membrane and controlling hemorrhage. This specimen was sent to the laboratory because the question of adenocarcinomatous changes in the polyp had to be considered at the time. The laboratory report indicated that there were early malignant changes at the base. The question naturally arose as to whether something more radical should be done. He was kept under observation and in May of 1940 a proctoscopic examination was done: no stricture, no ulceration, no thickening of the mucosa was noted over the entire field of observation through the sigmoidoscope. Since the base was clear and the sigmoidoscopic examination was negative, nothing further was done at that time.

On June 28 a barium enema was done. The barium enema did not reveal sufficient information to enable one to make a diagnosis of polyposis. After the bowel had been thoroughly emptied of barium on July 2, 1940 a proctoscopic examination was done without pain to the patient, and without difficulty. At this time two unusual findings were noted. One was that in the field one could see what looked like small yellow plumes waving in the wind, and a smooth wall which seemed to be too smooth for mucous membrane of the sigmoid or rectum. Suspicion was aroused as to the possibility of this being a perforation. Within an hour the patient began to complain of abdominal pain, nausea and vomiting, and within two or three hours there was abdominal rigidity. He was sent immediately to the x-ray laboratory and definite evidence of pneumoperitoneum was found. The catastrophe was recognized. He was immediately sent to the operating room: the perforation was found on the anterior wall of the upper portion of the rectum, probably near the rectosigmoid junction. This was closed and colostomy was done in the transverse colon.

The patient had a stormy convalescence but had very little peritoneal reaction. Sulfanilamide by hypodermoclysis was given for whatever it might have been worth. Infusions and transfusions were used, as well as nasal suction.

On August 23 an abdominoperineal resection of the colon and rectum was done. At the present time the patient is in good condition, gaining weight and having very little trouble.

In both instances polyposis had remained undiagnosed. In the first instance the patient had been operated on three and a half years earlier and even though the appendix did give a hint as to the possibility of other trouble, no attention was given to it and the patient was treated for a secondary anemia.

The second patient presented no manifestations which directed the attending medical man to the rectum or colon. When the patient did present himself the polyp was about the size of a golf ball. The polyp already showed manifestations of malignant changes. When further diagnostic studies, including a proctoscopic examination, were made, perforation of the bowel resulted. The emergency procedures which were carried out have been discussed. The final stage of the operation consisted in an abdominoperineal resection and permanent colostomy.

The significance of the bloody stools and an earlier use of a contrast barium enema to say nothing of a proctoscopic examination in both cases, would have revealed at an earlier stage the presence of polyps. The importance of not overlooking the tendency of polyps to become malignant cannot be over-emphasized. When one polyp is found the chances are that there are more. If due consideration is given to this, more of these patients will be seen and operated upon, and probably fewer patients will die of carcinoma of the bowel secondary to polyposis.

When considering an operation for polyposis, if the polyposis does not involve the rectum or rectosigmoid, permanent ileosigmoidostomy and a resection of the cecum, terminal ileum, ascending, transverse descending colon will suffice. If polyposis is present in the sigmoid or rectum, then it is necessary to do a permanent ileostomy and complete resection of the bowel, if necessary in stages, should be done.

If there is any operation which requires the surgeon to be familiar with the distribution of the blood supply and lines of cleavage within the abdomen, it is colectomy. If the tissues in the mesocolon become stained with blood, difficulties are increased. Sharp dissection of the lateral parietal peritoneum will enable one to free the cecum and ascending colon and, with the use of transillumination, the blood vessels in the mesocolon can be easily seen and ligated under direct vision. This particular procedure aids one greatly in not only shortening the period of the operative procedure, but in diminishing the blood loss.

Carcinoma of the Rectum and Rectosigmoid

One of the saddest stories is that of carcinoma of the rectum at the stage of development at which these patients finally are presented to the surgeon for such feeble efforts as he can make in their behalf.

We hear papers about large groups of cases which are being cured. We do not hear as a rule of the cases which come too late to the surgeon to be cured. We do not hear of the number of patients treated for hemorrhoids, strictures of the rectum, amebiasis and pernicious anemia, whose cancers are inoperable when they reach a surgeon.

For the above reasons I am going to outline a few of these sad stories:

Case 3.—Mrs. M., aged 28, in July, 1934, consulted a clinic because of constipation. She was given large amounts of purgatives, *but not examined.* When the purgatives had no effect she consulted another clinic and was told that she had a stricture: there she was treated with mineral oil and a high caloric diet. Because a Frei test was reported positive, the conclusion must have been reached that the patient had lymphogranuloma inguinale. By September of the same year, when she was having constant aching pain in the rectum, she told the doctor that her stools were never larger than a pencil, she was given codein and aspirin for relief. *In the latter part of November she was examined.* "About three inches up, a mass can be palpated which is hard and resistant. The opening in the bowel can be palpated in the curve of the sacrum. There is a nodular mass which protrudes through the anterior sacral wall."

On December 1 an x-ray was taken: "In spite of considerable pressure only a few small flakes of barium can be forced beyond what appears to be almost a complete occlusion of the bowel at the upper portions of the rectum."

The patient finally went to operation on Dec. 21, 1934, at which time—"carcinoma of the rectum with metastases to the liver, to the peritoneum, and the peritoneal surface of the large bowel from the cecum to its terminus" was found. It was impossible to do more than a cecostomy for the purpose of giving the patient some relief. This patient survived until June, 1935.

Constipation and abdominal pain were the only symptoms complained of: although this patient went to several physicians, no one took the trouble to do more than give purgatives. No attempt was made to make a rectal examination or to have a barium enema. When the x-ray studies were finally made it was found that the obstruction was almost complete. At operation there were extensive metastases throughout the abdominal cavity, making it impossible to do more than a cecostomy.

Further comments on this individual's case are unnecessary. For those who would think that this is an extreme instance, the following may prove his conclusion to be unjustifiable.

CASE A.—Mr. B. M., aged 55, was first seen by me in November 1938. Five months previously this patient had had "a complete physical check-up in a hospital." He was told by the doctors "they could find nothing wrong with him."

Mr. M. stated that for six months he had been having great quantities of gas "in stomach." He suffered severe abdominal pain. He was constipated and each bowel movement was very small. He stated that "he had been troubled with hemorrhoids, and that he had passed bright red blood in the stools." At times he "had attacks of diarrhea, which had been controlled with medication. Marked loss of weight."

The report of the x-ray studies follows: "Examination of the colon by means of a barium enema reveals a filling defect, approximately 2 cm. in length at the rectosigmoid junction. The lumen of the colon in this area is represented by an irregular tract from one wall of which apparently protrudes an ulcer crater. Bowel above and below this point appears to be free of disease and the impression is that of a carcinoma of the rectosigmoid." A film made after evacuation of the barium and instillation of air confirmed the findings of the direct examination.

At operation we found glands in the mesocolon to the left of the midline, all enlarged, so that I felt that I would not be able to do a radical operation. Further examination revealed a large lesion involving the sigmoid which seemed fixed in the pelvis. The descending colon could not be mobilized.

With all these facts before me I decided it would be futile to attempt to do a radical operation. Since the descending colon could not be easily mobilized, the transverse colon was brought into the upper angle of the wound and the colostomy completed.

The patient lived for several months.

CASE 5. Mr. E. M., aged 67 had been constipated for about six months following hemorrhoidectomy. He had been using laxatives continually during this time. The general health had been good, his appetite good, and he had not lost any weight.

On March 3, 1936, a mass almost completely around the rectal lumen was found. The following note was made: "About 2½ inches up one encounters a hard irregular mass. . . Proctoscopic examination reveals a hard polypoid, infiltrated wall, whitish yellow in color, dark ulcerative areas; bloody mucus escapes continuously. Impression: Adenocarcinoma of the rectum. The glands in both groins are enlarged, the liver not palpably enlarged. The glands in the left supraclavicular region are not enlarged."

The barium enema revealed an annular somewhat irregular constriction of the rectum, 2½ to 3 inches above the anal margin.

A one-stage abdominoperineal resection of the bowel was done on March 18. On March 22 the patient died. Autopsy was refused.

This patient did not come under observation until the lesions had almost completely circumscribed the lumen of the bowel, showing that it had evidently been present for a year and a half or longer.

CASE 5:—Mr. O. B., aged 45, had had obstinate constipation alternating with bloody diarrhea for three months. There was a history of marked weakness and the loss of about 20 pounds.

The man was extremely emaciated. Proctoscopic examination revealed a fungating mass at the rectosigmoid junction. It is interesting in reviewing the history to note that six doctors had examined the patient by means of a proctoscope before the lesion was found.

On digital examination of the rectum a mass was discovered above the level of the prostate, apparently indistinguishable from the structures immediately surrounding the rectum.

Based on the proctoscopic findings and x-ray, as well as the digital examination, operation was advised. It is worthy of note that the patient did not have a secondary anemia, during his stay in the hospital prior to operation.

In June, 1936, I did a one-stage abdominoperineal resection after the Miles plan. The pathologic report was: "A gland cell carcinoma, Broders' classification grade 2."

Mr. O. B. is living, has a controlled colostomy, and is able to carry on his ordinary activities.

In spite of the large size of the growth, there were no metastases found. This patient has survived a little more than four years and is apparently in good condition.

An interesting comment here is that the patient has a controllable artificial anus: one stool a day after which he is not disturbed at all by any bowel movement.

Carcinoma of the Transverse Colon

Two of the cases were treated for pernicious anemia prior to coming under observation for surgical intervention.

Case 6.—Mr. L. had had a "G. I. series" made. The radiologist reported: "Evidence of an extensive irritability of the colon throughout. . . Possibly a chronic cholecystitis and appendicitis."

Three weeks later another radiologist reported "In the distal ascending and proximal transverse colon, a very extensive filling defect is observed. This is apparently due to a definite lesion occupying this area. . . . Conclusion: Infiltration lesion of the distal ascending and proximal transverse colon probably malignant."

After proper preparation with transfusion, he was operated on May 30, 1927. A carcinoma involving the transverse colon without metastases to distal organs was found. I was able to do a resection and an end-to-end anastomosis. During the following three months the patient gained 25 pounds.

The pathologic diagnosis was: "Adenocarcinoma extending to and involving the lymph nodes of the meso colon."

One year later Mr. L. returned with evidence of a carcinoma involving the sigmoid. Following the second operation however, the patient developed acute dilatation of the stomach and urinary suppression: after several days he died.

Case 7.—Mrs. S., aged 44, had been operated upon in April, 1934, by a surgeon who repaired a ventral hernia, and at the same time did a perineor-

rhaphy. Before the operation she had noted blood clots in her stool. She continued to complain of acute generalized abdominal pain and in August 1934 she had a massive hemorrhage from the bowel. X-rays were taken (so the notes state) and no definite conclusions were reached.

She was given liver extract intramuscularly with no effect. She rapidly lost weight, marked weakness developed, and increasingly large amounts of blood were lost by rectum. Until October the patient was treated for pernicious anemia at this time a barium enema was given, and: "definite filling defects in the transverse segment and the descending colon found."

In November she was operated upon and a carcinoma of the left half of the transverse colon and splenic flexure found.

Resection of the transverse colon and portion of the descending colon was done with an end-to-end anastomosis. She gained 50 pounds during the next eight months. Her bowels acted without purgatives and her appetite remained good. However, in August, 1935, I found that the liver was easily palpable, with surface nodules varying in size. She survived for a period of several months. At autopsy the entire peritoneum was found seeded with metastases.

Here is a patient who was operated on for a ventral hernia in April. In November it was found that she had an extensive carcinoma involving the transverse colon. It seems reasonable to suppose that at the time the ventral hernia was repaired, the carcinoma of the transverse colon was present; particularly as the patient had been having bloody stools and acute abdominal pain, which had persisted over a long period of time. Yet no study was made of her colon, and no attention was paid to the bloody stools.

A little later on in spite of the persistence of her abdominal pain and hemorrhages from the bowel, liver extract was given under the mistaken impression that she had pernicious anemia.

To show that this is not an unusual occurrence the following case is cited:

Case 8.—In August 1935, Mr. J. V., aged 50, collapsed after taking a short walk. He was told that he was anemic and needed treatment. For this liver extract was given. In spite of this treatment he had been growing progressively weaker. When he came under our observation in March 1936, a barium enema disclosed "in the proximal portion of the transverse colon there is an irregular narrowing filling defect about 8 cms in length. The lumen is ragged and has the appearance of an intrinsic neoplasm of the intestines. The findings are those of carcinoma of the transverse colon."

Resection of the transverse colon with end-to-end anastamosis was done. He developed a pulmonary complication from which he died less than 48 hours following the operation. General peritonitis was found at autopsy.

Carcinoma of the Ascending Colon

Case 9.—Mrs. C. S., aged 52, was admitted to Touro Infirmary on Jan. 9, 1936. Her chief complaint was pain in the right side of the abdomen; this

pain was associated with fever. She also reported a loss of 65 pounds during the previous five years.

In February 1934, she had noticed cramp-like pains in her legs, particularly at night. After massage and the use of heat without success she went to a doctor, who after having blood tests advised her that she was diabetic and prescribed a diet. The cramps persisted, and she then applied to a clinic *where she was told that she had anemia.* During the latter part of 1934 she noticed swelling of the abdomen.

On admission to the hospital a large mass in the right portion of the abdomen was found. The mass extended from the ribs to the crest of the ileum. It was tender, but it was not definitely connected with the liver. Secondary anemia was found. The stools were negative for occult blood. A barium enema showed a defect in the cecum suggesting a neoplasm.

Operative Findings: "Carcinoma of the ascending colon, retroperitoneal glands, metastatic in character." Ileocolostomy was all that could be done.

As a result of incomplete examination and failure to make a radiologic study during a period of two years, the patient on admission to the hospital was found to be no longer operable from the standpoint of radical surgery.

It is hard to believe that anyone today does not know that profound anemias are associated with carcinomas of the large bowel, particularly of the ascending colon and cecum. Here is a glaring illustration of how patients can be under observation by recognized medical men for a period of more than two years before any effort is made to make a diagnosis, at least a diagnosis which might be helpful to the patient.

The inference that massive intestinal hemorrhage is evidence of an ulcerated bowel lesion however, is not justifiable. In order to illustrate this particular point, another case is introduced.

CASE 10.—On admission in August, 1940, Mrs. M. H., aged 45, complained of recurring hemorrhages from the bowel. About eleven months earlier she had begun to have frequent bowel movements: the stools were semisolid and were accompanied by abdominal pain. There was occasional loss of bright red blood in the stools. Recently the abdominal pain had become more constant and localized particularly on the left side in the upper abdomen. There had been marked weight loss, anorexia and diarrhea.

This patient's surgical history dated back fourteen years. In 1926 a gastroenterostomy had been done for chronic peptic ulcer; this was followed by repeated attacks of vomiting and in 1934 a Polya resection of the stomach, with entero-enterostomy, was performed. Her general health improved to some extent. About two years later, thyroidectomy was done for a nodular toxic goiter.

The red count was 1,700,000; hemoglobin, 50 per cent; platelet count, 420,000; coagulation time, 1 and ½ minutes; bleeding time, 1 minute; prothrombin time 100 per cent. Differential count showed no abnormal red cells; neutrophils 70 per cent, small lymphycytes 26, large 4. Gastric analysis

showed no free hydrocloric acid, total acidity of only 2. Benzidin test was positive. Microscopic examination showed an occasional red blood cell. Feces showed mucus and blood. Vitamin C was .6 mg. per cent; serum protein, 6.5; dextrose 105; non-protein nitrogen, 25; cholesterol, 156; chlorides, 468; carbon dioxide combining power, 54.1 volumes per cent. X-ray examination of the colon: "The bowel is tubulated throughout. There is nothing suggestive of an intrinsic lesion." Roentgenologic studies did not show anything suggestive of a jejunal ulcer at the site of the stoma of the previous resection of the stomach.

After repeated transfusions, the use of vitamin K and liver extract, exploratory abdominal section was done with a view to determine whether there was a possible marginal ulcer or evidence of polyposis of the colon.

The stomach was free of any evidence of intrinsic lesions. The stoma was soft and pliable and there was no evidence of any recent inflammatory manifestation about it. The colon was soft throughout, there were no constrictions noted and no masses palpable at any level of the colon. To our astonishment we found the spleen markedly enlarged. It was about 5 inches in the long axis in the body and about 3½ inches in the anteroposterior diameter. It had a red granular appearance and there were lobulations of the fetal type. There were adhesions between the spleen and the diaphragm. On account of the appearance of the spleen and because it seemed to be the most likely cause of the bleeding, splenectomy was performed.

Since the operation the patient has had no rectal bleeding, nor bleeding anywhere else. The conclusion has been forced upon me that we were dealing with a Banti's syndrome splenic anemia. The time since the operation is too short to estimate end results; this much can be said however, that the patient was having frequent massive hemorrhages from the bowel even during the few days that she was in the hospital. Following the operation in August there has not been a recurrence of blood in the stool.

SUMMARY

Evidence has been presented that malignant tumors of the large bowel are often undiagnosed until a late stage. This is not all due to negligence on the part of patients. Many times they apply for treatment and because only a casual examination is made the diagnosis is missed.

Change in bowel habits or blood in the stools warrants a careful investigation. Any anemia which is associated with blood in the stools warrants a careful investigation of the colon before a diagnosis of splenic anemia or other blood dyscrasia is justifiable.

Only by a careful study of patients as they present themselves can we hope to do more for carcinoma of the large bowel.

It is safe to say that, if the diagnosis is made at an early enough period and if the operation is done along anatomic lines, we can look forward to a brighter picture than has been presented in this abstract of personal experiences. It behooves all of us to pay more attention to x-ray findings; particularly, the contrast barium enema.

The finding of a rectal polyp should excite suspicion that there may be others present.

Benign looking, even though small, polyps do show, at times, early malignant changes. Unless colectomy is done in cases of polyposis, in my opinion little can be expected for the future of the patient.

More careful studies of patients will avoid many unpleasant surprises when the abdomen is opened.

Narrow specialization often makes us near-sighted. To do most for the patient we must consider all of his manifestations. Valuable time is often wasted by trying to make a disease picture fit in a category of the individual physician's particular specialty.

Breadth of vision and a spirit of fair play is essential if we are to make progress in the management of malignancies of the bowel.

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FRACTURES OF THE JAWS

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THE lower jaw is more often fractured than any of the face bones. Because of its loose connection with the skull, fractures of the mandible are much less likely to be associated with fractures of the skull than fractures of the superior maxilla. However, it is possible for force due to a fall or blow on the chin to be transmitted through the condyle upward with resulting fracture of the floor of the middle fossa.

For the most efficient treatment of a fracture of the mandible it is important to have a full understanding of the anatomy of the jaw and the action of the muscles which are attached to it. The action of these muscles do much to maintain the displacement of the fractured fragments although the immediate displacement is usually determined by the direction of the force causing the fracture.

The mandible consists of a horizontal portion, the body, strongly curved so as somewhat to resemble a horseshoe from the ends of which two branches or rami ascend almost at right angles. The place of union of the separate halves where they meet in the midline is known as the symphysis. On the lateral surface of the body opposite the second bicuspid tooth is the mental foramen which transmits the mental nerve and vessels. The upper border of the ramus presents two processes, the anterior one known as the coronoid which is separated from the posterior or condylar process by a deep concavity, the sigmoid notch. The condylar process consists of the oval-shaped condyle which articulates with the glenoid cavity in the temporal bone and is supported by the narrower neck. The mouth is opened for the most part by the suprahyoid group of muscles, especially the digastric and the geniohyoid group of muscles, which run from the hyoid bone to insert near the symphysis of the mandible. Closing is accomplished by the masseters inserted on the outer surface of the angle assisted by the temporal inserted into the coronoid and the internal pterygoid which attaches to the inner surface of the angle.

The superior border of the mandible is covered by little more than a thin mucoperiosteum which is easily torn. Consequently almost all fractures through the body are compound inside the mouth. Obviously fractures through the ramus and its processes are usually not compound. The weakest place in the arch of the body is the region of the mental foramen and for this reason most frac-

tures of the mandible are in this region. Such fractures not infrequently are bilateral, the bone breaking at the mental foramen on one side and through the region of the angle on the other. The displacement produced by a fracture through the mental foramen is usually typical, the smaller or posterior fragment being elevated

Fig. 1, a. Photograph of patient with fracture through left angle taken three weeks following injury. There had been no fixation. Patient had large abscess which required external drainage. Teeth wired in occlusion.

Fig. 1, b. X-ray of patient shown in fig. 1, a, showing fracture through angle with no displacement.

by the muscles of closing (masseter, pterygoid, and temporal) so that the teeth in this fragment are in occlusion while the larger fragment is pulled downward and mesially by the action of the depressors. There is also usually some overlapping of fragments. Very similar displacement usually follows a fracture through the molar region with possible slight medial displacement of the short fragment, overlapped by the larger fragment which is drawn downward. There usually is slight displacement with fractures through the angle because of the support of the masseter muscle on the outside and internal pterygoid on the inner surface. If the fracture is

through the neck of the condyle, the jaw is displaced toward the opposite side and the condyle is tilted upward and mesially because of the action of the external pterygoid muscle. Fractures of the coronoid process are very rare and accompanied by no displacement although there is usually some limitation of opening of the mouth.

Fig. 2. X-ray showing fracture of mandible through socket of third molar tooth with no displacement. The tooth in line of fracture serves to help maintain the position of fragments and was extracted after fracture had healed.

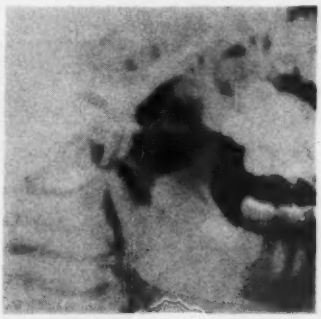

Fig. 3. Fracture of condyle with slight anterior displacement. Treated by wiring teeth in occlusion. Excellent functional result.

The recognition of a fractured jaw is usually easy. There is swelling and severe pain in the jaw which is aggravated by movement, talking or swallowing. There is bleeding from the mouth if the fracture is compound on the inside and this may be only slight or profuse. Usually it is possible to detect a break or crack in the mucous membrane and manipulation may elicit crepitus. This should be looked for by the very gentlest of manipulation but its presence means undoubted fracture. If the inferior dental nerve has been severed or injured there will be numbness of the lip and gum on the injured side. Fractures of the ramus are not so easily detected

by physical examination but are easily found by x-ray and every suspected fracture should have the entire bone examined with the x-ray. This is not for diagnostic purposes only but to show the position of the fragments, the condition of the teeth and possible involvement of tooth roots, and the direction of fracture lines.

Fig. 4, a. Oblique fracture of mandible with slight downward displacement of the anterior fragment. Posterior fragment is held in position nicely by third molar tooth which prevents masseter muscle from pulling posterior fragment upward.

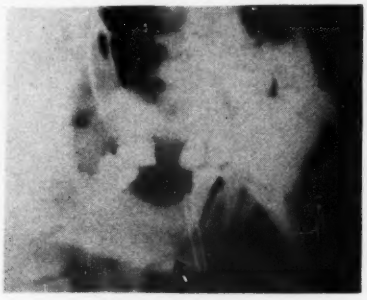

Fig. 4, b. Following wiring teeth in occlusion with one circumferential wire around body of mandible to hold fragments more firmly together.

The treatment of a fracture of the lower jaw should be directed to replacing and maintaining the fragments in their correct position until healing has occurred. This cannot be accomplished by bandaging alone although a bandage properly applied will give some support and possibly some comfort to the patient during transportation. In applying a bandage, care should be taken not to place a turn around the front of the chin as this would only increase the displacement and discomfort. The bandage should be used as a firm sling supporting the jaw from the vertex of the head.

Although adequate fixation may be obtained by means of dental splints, or by direct bone fixation with wires or bone plates, a much simpler as well as more satisfactory method is by the direct fixation of the lower jaw to the upper jaw, by wires fastened directly to the necks of the teeth.

Dental splints require the services of a well trained dentist and such a man is not always available but the materials required for wiring the teeth are almost always near at hand. The wire I prefer to use is a No. 24 soft stainless steel wire which is strong, yet flexible and is well tolerated by the tissues. However, if such wire

Fig. 5. Healed fracture of mandible anterior to angle in patient with edentulous upper jaw. Treated by wiring lower teeth to upper denture.

is not available, soft iron wire as is used by florists is a satisfactory substitute, although it does not stay as clean as does the stainless steel.

The patient should be able to cooperate and the stomach should be empty. Local anesthesia is to be preferred since it would not be safe to wire teeth in occlusion under general anesthetic unless preparations have been made to open the jaws immediately in case of respiratory difficulty or vomiting. A very satisfactory anesthesia may be obtained by a deep block of the second and third divisions of the fifth nerve with 2 per cent procain hydrochloride. In many cases it is possible to wire the teeth with no anesthesia other than a preliminary hypodermic of morphine or scopolamine but the operator should always be gentle in his manipulations.

The wire is cut into 14 to 16 inch lengths and bent near the middle. With a pair of forceps one end should be passed through an interdental space from the lingual surface and the other end through the interdental space on the other side of the tooth. The wire is then tightened around the neck of the tooth and held by making several turns. If it is placed high up around the neck of

the tooth and tightened sufficiently, the wire will almost disappear under the gingival margin. An individual wire is thus placed around two teeth on each side above and if possible on the corresponding lower teeth. The ends of the wires are left long and when all eight have been placed, a careful study of the occlusion normal for the

Fig. 6, a. Fracture through symphysis of mandible with rather wide separation of fragments.

Fig. 6, b. Following wiring teeth in occlusion plus direct bone wiring through small drill holes on either side the fracture. This is usually necessary in fractures through symphysis because of slight rocking motion that is hard to control.

patient should be made. It is often a help here for the patient to be awake so he can tell when the teeth feel in their normal position. When this position is obtained an assistant holds the jaw firmly in this position while the operator twists the corresponding upper and lower wires together, taking several turns to insure against their becoming untwisted. The long ends are then cut off and the short sharp ends turned under with forceps to keep them from sticking into the buccal mucosa.

If present, the bicuspid teeth are best for wiring, the molars next, and the cuspids and incisors last as they do not retain wires well because of their peg shapes.

Fig. 7, a. Double fracture of lower jaw in patient with edentulous mouth. In this case there had been extreme absorption of bone and the body of mandible was only about 4 mm. in diameter. Treated by circumferential wires around lower denture.

Fig. 7, b. Showing result following removal of wires. There was firm bony union at site of each fracture. The lower denture served as a satisfactory splint to maintain position of fragments.

In case of fracture through a tooth socket it is a safe procedure to establish external drainage through a small stab wound below the site of the fracture. A small rubber drain should be inserted

and if suppuration does not occur, the drain may be removed in a few days and the resulting scar is not at all objectionable. If external drainage is not established, many cases will go on to form an abscess with probably localized osteomyelitis and thus increase the amount of scar and discomfort and prolong convalescence.

It never is necessary to remove teeth for feeding purposes. During the period the teeth are wired the patient's diet is restricted to liquids and it is possible to get liquids between the teeth and behind the molars even if the occlusion is perfect.

The wires should be kept on four or five weeks with single fractures and for six to eight weeks with double fractures. The period of fixation should be prolonged if infection supervenes or if there has been a loss of substance. It is well to make x-ray pictures before the wires are removed although it is often difficult to say from x-ray alone just when union is solid. The teeth that have been wired become loose in their sockets but usually tighten within a few days after removal of the wires.

In cases of double fracture where the middle fragment has been pulled down into the neck it is often necessary to support this fragment by circumferential wires. This is especially true if this fragment does not contain teeth strong enough to stand traction. Either silver or stainless steel wire is used and the tissues tolerate either very well. This wire is easily placed by threading it through the eye of a large needle which is passed from inside out just behind the posterior border of the bone and emerging through a stab wound below the bone. The needle is re-inserted in the stab wound and passed upward hugging the anterior surface of the bone to emerge in the mouth on the labial side of the mandible. The two ends of the wire are then tightened by twisting snugly around the bone and if upper teeth are present, twisted to wires that have been placed around them. If there are no upper teeth which can be used, the wires may be tightened over a lower denture or plate if the patient has one. If not, it may be necessary to have a vulcanite splint made which covers the alveolar ridge on either side of the fracture and tightening the wires over this splint.

If there has been a loss of substance, the remaining teeth, if present, should be wired in occlusion even if a large gap is left between the fragments. These cases, however, often require a dental splint to preserve the width of the arch. Periosteum should never be sacrificed as there is often a surprising regeneration of bone.

Fractures in edentulous jaws with little or no displacement can often be held by using upper and lower plates as splints and apply-

ing a bandage to support the jaw. Other cases can be held by circumferential wires around lower plate and jaw or occasionally by wires around only the bone itself or by direct bone wiring. These cases are all individual problems and often require ingenuity on the part of the surgeon as to the best method of fixation.

Fractures of the condyle are treated by fixation in occlusion in similar manner. In such cases ankylosis rarely occurs even though x-ray pictures may show the condyle markedly displaced. Should ankylosis occur, the condyle will have to be removed but it is not advisable to remove it immediately since most cases will never need it. Fractures of the coronoid are rare and require only supportive bandaging.

Non-union rarely occurs although union in bad position may require open operation to align the fragments properly.

Fractures of both upper and lower jaws in which there is little displacement should be fixed by interdental wiring supplemented by a plaster cap with a rubber sling from the vertex of the cap under the chin for support. Many of these cases, however, require dental splints, especially if no teeth are present.

Fractures of the upper jaw are much less frequent than fractures of the lower jaw but are much more often associated with brain injury or involvement of other structures such as the malar bone and infraorbital border. In complete transverse fractures the face elongates due to the jaw dropping down from pull of gravity.

If the fracture is through the body of the maxilla on one side only, it should be replaced in its proper place where it is best held by interdental wiring of the teeth on the sound side. Innumerable types of splints have been described for use in treatment of complete transverse fractures. The principle of them all is more or less similar and all are devised to support the downward displacement by overhead traction. The treatment of each individual case must be varied as the case demands.

Many patients with complete transverse fractures of the upper jaw even when occlusion and function appear normal, are often conscious of a springy sensation or false movement on chewing. This, however, must be accepted and the patient soon becomes accustomed to it.

REGIONAL ILEITIS

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REGIONAL ileitis is not a new disease; it was first reported in 1806 by Combe and Saunders before the Royal College of Physicians of London. However, it is surprising that this condition should for so long have escaped surgical observation. The re-discovery in 1932 by Crohn[1] and his associates, and recent works of many others, have established regional ileitis as a clinical entity. Regardless of attention and interest that this disease has drawn in the past eight years, it is still not a common one. The imitation of other diseases, such as appendicitis, tuberculosis of the intestine, ulcerative colitis, diverticulitis, pelvic disorders, and cancer, has been a factor in our failure to recognize the true condition.

The original article of Crohn laid emphasis upon the fact that this condition was limited to the lower end of the ileum, and did not extend beyond the ileocecal valve. Further study has shown that the duodenum appears to be the only part of the intestinal tract free from the disease. The terminal ileum is, by far, the most frequently diseased part of the gut.

The early reports of ileitis came from the larger cities of the East and Jewish hospitals. This, no doubt, was responsible for the belief that its greatest incidence was in the Hebrew race. Rarely has this condition been encountered in the negro race; only two cases have been recognized in the Colored Division of Grady Hospital[2], one at operation, and another at autopsy. Cutler[3], in his series of eleven cases, reported one case of a negress. Grimes and Massie[4] have added a case in a young negro man. Males are more often affected than females, and the greatest number of cases are found between the ages of 20 and 30 years.

ETIOLOGY

The cause of ileitis is still unknown. Many suggestions as to the etiology have been propounded. Because of the proximity of the appendix, this organ was first looked upon wtih suspicion. However, in a majority of the reported cases, the appendix had been removed without affecting the course of the disease. Study of the removed appendices did not reveal the usual lesions found in ileitis. Spontaneous recovery has followed the removal of a diseased appendix. The mistaken diagnosis of acute appendicitis in many cases of ileitis has been the greatest factor in recognizing the true condition early. Homans[5] expressed the opinion that the "vascular rela-

tion of the appendix to the lower ileum, rather than the cecum, undoubtedly favors its involvement in infections of the lowest portion of the small bowel." He was possibly influenced by the fact that he had removed an ulcerated appendix associated with a terminal ileitis. Mixter[6] did not believe in such relationship.

Lymphatic disturbances of the ileocecal region has been advanced by Reichert and Mathes[7] as a cause of this disease.

The attempt to place the blame on any specific organism for ileitis has been without a conviction. On account of the similarity of the gross appearance of this disease, and its usual chronic course, tuberculosis was first thought to be the true cause. The microscopic similarity of ileitis to tuberculosis made the two conditions hard to differentiate. But most pathologists now agree that the disease is definitely not caused by the Koch bacillus.

The similarity of symptoms to dysentery led Felsen[8] to believe the bacillus of dysentery to be the cause; however, he was not able to grow a culture from the resected growths. I believe we are safe in saying the disease is definitely not caused by the dysentery bacillus.

Pathology

More can be said of the pathology of regional ileitis than of its etiology. However, the early gross and microscopic descriptions have not been enlarged by more recent studies. It is better that the pathology be divided into the acute lesions and the chronic sclerosing cases. The chronic cases have been the ones most often studied, as these are the cases that furnish the pathologist the greater part of his material.

In the acute lesions we find the bowel greatly enlarged, firm, and edematous; in those cases where the edema is so pronounced, the bowel resembles a firm rubber tube[9]. The gut is beef red and the serosa is spotted with tubercle-like areas. The mesentery is greatly swollen and contains enlarged lymph glands. Upon opening the bowel, ulcers are found, which usually are along the mesenteric side; the ulcers are mostly in the long axis of the bowel. The lumen of the bowel is pressed upon from all sides by the inflammatory changes, producing a small opening through the affected area. Microscopically, the tissue changes are those of an acute inflammation with areas of ulceration. The presence of giant cells, with mononuclear infiltration, was suggestive of tuberculosis. The lymph node changes are manifested as simple hyperplasia.

The chronic sclerosing lesions are the result of acute changes being replaced by scar tissue, with contraction and distortion of the

bowels. Adhesion to the surrounding organs is the rule. It is here that one of the characteristics of this disease appears: the formation of fistulous tracts[10]. These tracts may connect other organs, forming internal fistulas; or, by adhesion of the ileum to the anterior abdominal wall, form an external fistula. Another characteristic of these fistulas is their persistency and resistance to closure; this is no doubt due to the solvent action of the intestinal juices. These fistulous tracts may seek exits at the most unsuspected places. The internal fistulas usually empty into the cecum, transverse colon, and sigmoid; however, cases have been reported involving the urinary bladder[11], vagina[12], and rectum. The external fistulas most often are found in the anterior abdominal wall along an appendix scar. This condition should lead one to be very suspicious of chronic ileitis. Other exits of external fistulas are: the peri-anal region, ischiorectal fossa, and rectovaginal tract. In those cases, which have histories of long-standing fistulous tracts, a careful history should be taken to rule out regional ileitis.

Symptoms

The symptoms of regional ileitis vary with the location of the lesion in the intestinal tract, its acuteness or chronicity, the duration and extent of the lesion, and the presence or absence of complications. Often, years pass before all the symptoms are noted. Because of the predilection of the terminal ileum, the majority of symptoms and signs are in the right lower quadrant of the abdomen. The chief signs and symptoms are loss of weight, cramping pains, diarrhea, palpable mass, nausea, vomiting, anemia, external fistulae, blood in the stools, fever, and leukocytosis. The early symptoms and their location so nearly resemble acute appendicitis, that over 50 per cent of the reported cases of ileitis have been mistaken for this disease. This factor, no doubt, led Crohn and his associates to divide the symptoms into four groups:

Group 1 are those which resemble acute appendicitis.
Group 2 are those cases presenting symptoms of ulcerative enteritis.
Group 3 comprises those cases with obstructive symptoms.
Group 4 are those cases with fistulas.

By far, the most constant symptoms are intermittent, cramping pains, and diarrhea; of these, pain is present in 100 per cent, and diarrhea in 80 per cent of the cases. In 75 per cent of the cases, a palpable mass is found in the right lower quadrant, mid-abdomen, or pelvis. Attention is called to the absence of rigidity except in the complicated cases.

Diagnosis

Diagnosis of regional ileitis, in the future, should be made with greater accuracy. A careful history and physical examination will rule out those conditions with which ileitis is confused. Roentgen study of the intestinal tract, as described by Kantor[13] is a most valuable aid in the diagnosis.

Treatment

The treatment of regional ileitis can be best considered for each of its clinical stages[14]. Because of spontaneous cure, surgical intervention in the acute stage is generally considered unwise. Medical treatment should consist of palliative measures of a bland diet, high in caloric value; attention should be given to the anemia. Diarrhea is best controlled with paregoric. The later stages of regional ileitis call for radical resection; most surgeons now agree that a wide excision of the diseased bowel and its mesentery, preferably in one stage, gives the best results.

Report of Case

A newspaper man, aged 31, was admitted to the hospital on Nov. 26, 1939, complaining of pain in the right lower quadrant, nausea and vomiting. For the preceding four months he had not felt well; his appetite had been poor, which he said was due to "nervous indigestion." This condition had been characterized by belching of gas, sour fluids and cramping pains in the lower abdomen; at times there had been actual nausea, but no vomiting until two days earlier. Bowel movements had been normal. Because of lassitude and the loss of 14 pounds in the preceding three months, he had become fearful of tuberculosis, and had therefore consulted a specialist in this field; his diagnosis had been negative. On the 23rd he had begun to have intermittent cramping pains in the abdomen, with nausea, following evening meals. The pain continued during the night, but was localized in the right lower quadrant. The following morning he vomited twice. Symptoms continued until the third day of acute illness, when he consulted a physician.

The abdomen was moderately distended, without visible peristalsis; slight tenderness was present in the right lower quadrant, most acute on deep palpation over the region of McBurney's point; a mass could be felt at this point; there was no rebound tenderness or rigidity. On rectal examination, a tender mass could be felt in the right lower quadrant.

Temperature: 100.2. *Blood*: hemoglobin 72 per cent; erythrocytes 4,010,000; leukocytes 16,450; polymorphonuclear neutrophils 82 per cent.

Admission Diagnosis: Acute appendicitis.

Operation revealed a small quantity of cloudy fluid in the abdomen. The appendix was rather firm, slightly enlarged, with congestion of the vessels of the serosa. The terminal ileum was greatly thickened, for a distance of 6 or 8 cm., firm, beefy red, with several small hemorrhagic areas, and a number of whitish tubercle-like formations. The mesentery was thickened, edematous, and contained enlarged glands. The inflammatory disturbance ended at the ileocecal valve.

The diagnosis of ileitis was made at operation, but the condition of the appendix seemed to require its extirpation. The pathologic diagnosis of this organ was ulcerative appendicitis. The abdomen was closed without drainage. The patient made an uneventful recovery, and was discharged on the sixteenth day.

Follow-up Notes: One year following operation patient had gained 17½ pounds, and had been symptom-free. Two x-ray studies of the gastro-intestinal tract since the operation were reported negative.

SUMMARY

1. Regional ileitis has been established as a clinical entity.

2. The cause of ileitis is still unknown.

3. The formation of fistulous tracts, late in the disease, is characteristic.

4. A history of loss of weight, intermittent cramping pains and diarrhea, should suggest regional ileitis.

5. Roentgen study of the intestinal tract is a valuable aid in the diagnosis.

6. The absence of rigidity, except in the complicated cases, is noted.

7. A case of spontaneous cure is reported.

8. Radical one-stage resection gives the best results.

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MIDLINE ABERRANT THYROID

Report of a Case

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THE term "aberrant thyroid" includes all portions of thyroid tissue not connected with the gland in other than the normal position. This term includes:

1. Lingual thyroid and thyroid tissue found along the thyroglossal tract.
2. Lateral aberrant thyroids or those in a cervical position lateral to the jugular vein.
3. The extremely rare intrathoracic goiter with no connection with the main thyroid body.
4. Those portions of thyroid tissue found in teratoid tumors and in sites far removed from the thyroid, such as thyroid tissue found in the ovary and scattered over the omentum.

Portions of the thyroid extending into the intrathoracic, substernal, subclavicular, retrotracheal and retrolaryngeal positions are not considered aberrant unless they have no direct connection with the main body of the thyroid. In this discussion will be considered only the first group, namely aberrant thyroid found along the thyroglossal tract.

In order properly to understand the appearance and location of aberrant thyroid tissue we must consider the embryology of the thyroid gland. It originates from a median ventral position in the primitive pharynx. From this point, which later becomes the foramen cecum at the base of the tongue, the gland descends to the region of the hyoid bone. This path of descent, known as the thyroglossal tract, atrophies in the normal embryo but at times persists and gives us the formation of thyroglossal duct cysts and sinuses. From the hyoid bone the gland descends to its normal position in the neck. It is along this entire tract that we may find rests or portions of thyroid tissue remaining. Those unconnected with the main body give us our aberrant thyroid tissue in the midline and lingual region and thyroglossal tract.

Norris, from his study of the human embryo has shown that groups of thyroid cells also arise in a lateral position in the primitive pharynx which would correspond to a fifth pharyngeal pouch. These pass downward and come into relation with the main thyroid body and fuse with the lateral lobes of the thyroid in the 15 mm. embryo but atrophy and form no part of the normal thyroid gland. An ar-

rest of this lateral descent and atrophy will account for the origin of lateral aberrant thyroid.

Moritz-Boyless made a careful search of the literature in 1932 and reported some 109 cases of lateral aberrant thyroid. This was carried up to 1939 by George Crile, Jr., who brought the number up to 136. Numerous cases of lingual aberrant thyroid have been reported but so far in my search of the literature, except for one case reported by Cattell, of the Lahey Clinic, I have been unable to find any similar cases.

Fig. 1. The appearance of the patient before operation.

A good clinical picture of aberrant thyroid may be obtained from a review of the reported cases. The condition may occur or be noted at any age from birth on. The usual history is that the patient has noticed a mass or tumor in the neck which has remained stationary in size and symptomless for a period of from one to twenty years. The fact that the tumor has remained about the same size and symptomless is probably the most characteristic differential point. It occurs about three times more frequently in females than in males; it also occurs much more frequently on either side than in the midline. The tumors vary in size and may be multiple, but those in the midline are usually single.

The diagnosis is rarely made preoperatively: the tumor is frequently confused with Hodgkin's disease, branchial cyst, dermoid,

thyroglossal duct cyst, carotid body tumor and enlarged lymph nodes. The midline tumor is frequently mistaken for an unruptured thyroglossal duct cyst.

The treatment of aberrant thyroid is operative: procedure is determined by the extent, size and location of the tumor or tumors and also whether malignant changes have taken place. At operation the diagnosis is easily made in that the tumor is coarsely lobulated, discrete, usually rounded and the cut surface of the tumor is granular. The tumor has a distinctive and almost diagnostic color-

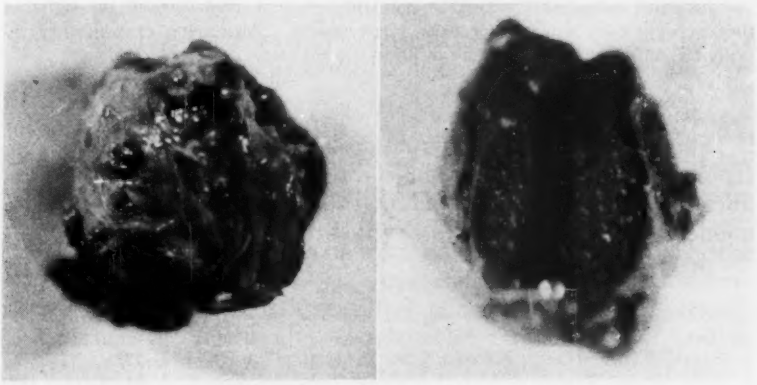

Fig. 2. On the left is natural-size photograph of the excised tumor. On the right the appearance of the cut surface is shown.

ing, namely bluish black areas are seen alternated with the gray or brownish red contrasting thyroid tissue. The dark coloring is usually due to hemorrhage.

Microscopic examination show a more or less characteristic picture, namely a papillary type of structure which is recognized as papillary cystadenoma. About fifty of Cattell's cases showed malignant changes, namely papillary cystadenocarcinoma.

These cases followed over a long period of time have shown the malignancy to be of a very low grade, and a good prognosis can be given and satisfactory results obtained by radical removal and postoperative radiation.

Report of Case

A little girl of 8 was brought in with a tumor in the midline of her neck. Her mother had first noticed this mass about two weeks after her birth. The tumor had grown very slowly. It had caused no symptoms and it had always been freely movable.

On physical examination a tumor about 3 cm. by 4 cm. was found just above the thyroid cartilage in the midline. It was freely movable, the surface was smooth and rounded. Impression at this time was unruptured thyroglossal duct cyst. At operation a rounded solid tumor was found loosely attached to the thyrohyoid membrane. It extended slightly over the hyoid bone above, and the thyroid cartilage below. The hyoid bone was cut because a thin fibrous cord extended under it and it was thought at the time that this might be a patent thyroglossal duct.

The thyroid gland was exposed below and was found in its normal position. There was no connection between the tumor and the gland proper. Exposure of the thyroid in these cases is important since the gland is sometimes absent and myxedema result after removal of a tumor of this type.

The child made an entirely uneventful recovery and showed no signs of thyroid deficiency during her subsequent course. Pathologic examination revealed a colloid cystadenoma in an aberrant thyroid.

SUMMARY

Discussion of aberrant thyroid disease has been given and a case report of aberrant thyroid tumor in the midline discussed. It is important to recognize this condition and to differentiate it since a good prognosis can be given in practically every case.

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GYNECOLOGIC PROBLEMS OF ELDERLY WOMEN

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IN THE last half century there has been a steady increase in longevity. This is particularly true in women. In 1890, the average life of a woman was 35 years. In 1930, it was 62.8 years, an increase of 27.8 years in that 40-year period. Approximately 8 per cent of our population is 60 years of age or older; and slightly more than half are females. It is little wonder that our predecessors wrote but little regarding the problems of elderly women.

This paper offers a brief discussion of not all, but the more common gynecologic problems of women sixty years or older. Pyuria, senile vaginitis, uterine prolapse, and tumors constitute 85 per cent of these problems.

Psychologic management is important. The woman of this age is shy, modest, timid, and usually stays away from the physician as long as possible. Too frequently she prefers not to be examined and fears painful treatments. Often her one anxiety is expressed in the question, "Doctor, do I have cancer?", and when informed that she has not chooses to bear her discomforts rather than submit to treatments. Fortunate is the physician who is gentle, sympathetic, and persuasive; and wise is he who selects methods and plans of treatment with the least discomfort to his patient.

In elderly women, organs and tissues have undergone physiologic involution, and atrophy is the normal state. The tissues are thin, smooth, non-elastic, and they have a diminished blood supply. Much of the subcutaneous fat has been lost. Susceptibility to trauma and irritation is a characteristic feature. Atrophic organs rarely become pathologic, but when they do the object is to restore them to a normal atrophic state and not to a physiologic state of reproduction.

Pyuria is common in the elder woman. Moses[1] of Brooklyn State Hospital found pyuria in 95 per cent of women over 65 out of 7,822 admissions. Chronic cystitis with cystocele and residual urine is the most frequent source of pyuria, but occasionally an upper tract focus may be the cause. The organism is usually Bacillus coli or one of the coccal group.

In the absence of hematuria, pyuria may be treated by rest, diet, heat, and corrective measures to overcome residual urine. A suitable pessary for support of cystocele is an indispensable temporary measure. As bacteriostatic agents mandelic acid and sulfanilamide or its derivatives are efficacious but it is essential to maintain a low

*p*H for the acid and an adequate concentration of the sulfanilamide. Functional tests are necessary before and during administration of either drug. Occasionally they can not be tolerated and hexamethylenamine with ammonium chloride will be useful. If hematuria is present and does not clear in a few days, more complete urologic examination is indicated.

Senile vaginitis is common after 60. It manifests itself by discharge, itching, burning, backache, and pelvic pain. On inspection it appears as petechial hemorrhagic ulcerations against a light red background. Often it is caused by the irritating discharge of a local lesion such as cervical polyp or urethral caruncle. Removal of such a lesion is all that is necessary for relief. The discharge must be examined for the presence of trichomonads or monilia yeast buds. Infestation from the former is rare in the senile. Vaginitis from monilia is infrequent and is best treated by bi-weekly vaginal paintings of half strength Lugol's solution and a nightly insertion of a capsule containing potassium iodate (.035 Gm.), and potassium iodide (.215 Gm.) with neutral colloidal kaolin. Gentian violet requires more frequent office visits and often causes a chemical vaginitis in the elderly woman.

But many cases of senile vaginitis are not due to a specific organism or an existing local lesion. The important factor here seems to be disturbed metabolic process of the vaginal mucosa with poor glycogen storage and a subsequent rise in the vaginal *p*H. Whether this disturbed metabolic process is due to the absence of ovarian hormone stimulation, the result of vitamin deficiency, or because of an infectious process is unknown, but from these hypotheses plans of therapy have developed.

Davis and Hartman[2], Mazer[3], Jacoby[4], and many others have treated senile vaginitis with estrogen. Although it relieves the underlying pathologic lesions and benefits symptoms by conversion of the senile mucosa into a physiologic state, it does not return the mucosa to a normal senile atrophy. Hence recurrence is common. Less than 50 per cent will remain permanently relieved by this method; and it does not seem wise to convert the mucosa into an abnormal state for the senile. On the average it will require from 2 to 4 months and not less than from 150,000 to 300,000 international units of estrogen intramuscularly to cause this mucosa change and afford relief.

Adair[5], Hesseltine[6], and Karnakay[7], believing that senile vaginitis is essentially an inflammatory process resulting from deficient glycogen in the mucosa, sought to correct this metabolic deficiency by supplying a nutritive substance in the form of acidified lactose with-

in the vagina and restoring a normal flora by lowering the vaginal *p*H. This method gives better results and recurrences are less, though its application must be over a longer period of time. It may be administered by the patient and is less expensive.

Simpson and Mason[8] have for several years successfully treated senile vaginitis with vitamin A administration in the form of cod or halibut liver oil. They found that the diets of most senile patients were deficient in vitamins and particularly vitamin A. Alleviation of symptoms and disappearance of lesions required less time than in hormone and lactose-acid therapy. It is known that nicotinic acid will cause symptomatic relief in many patients[9]. Perhaps when the inter-relationship between vitamins and hormones is better understood, we may have a more specific plan of therapy for senile vaginitis. At present our plan consists of a high vitamin diet, halibut liver oil, rest, and vaginal administration of glucose-acid tablets. This treatment gives good results in from 3 to 5 months.

Prolapsus uteri is a frequent ailment of elderly women. Symptoms and complications are well known. Its management may be divided into palliative and currative. Palliative measures make the patient more comfortable by relieving irritation and diminishing the dragging on the uterine supports. Temporary relief is obtained by pessary support which finds its usefulness in poor operative risk, preparation for operation, and in patients who refuse surgery.

There are many types of pessaries but the most useful for the aged woman is the inflated ring or doughnut pessary. It is soft, less injurious, and accommodates itself better to the birth canal structures. Occasionally pelvic floor support will be inadequate to maintain a pessary in position and either a T-bandage or a belt and cup pessary will be necessary. The later is likely to cause ulceration. Most patients can learn to remove, cleanse, and re-insert their pessaries satisfactorily.

Correction of uterine supporting structures by surgery offers the greatest relief and the only permanent cure. When can women in the seventh and eighth decade submit to vaginal plastics with safety? In general, we can say that, if there are no severely damaged organs and if the patient is up and about with fair vigor, she can tolerate very well a vaginal plastic, at least under local anesthesia.

The choice of operation depends upon the type of prolapse, and the type of prolapse depends upon what supporting structures that have been injured or have lost their tonicity. Prolapse is due primarily to a relaxation and stretching of the parametrial connective tissues which are attached to the supravaginal portion of the cer-

vix. From here this connective tissue spreads outward to the pelvic bones as the pubocervical fascia, the parametrial fascia, or cardinal ligaments, and as the uterosacral ligaments. Prolapse can not occur when the parametrial fascias or holding structures are tense and have not lost their tone. Loss of tone and injury to the pelvic floor are secondary factors. In the elderly woman prolapse is the result usually of a combination of injury or relaxation to the holding structures and the pelvic floor support. Suitable operations for various types of prolapse are vaginal hysterectomy, the Watkins interposition operation, the Manchester or Fothergill parametrial fixation procedure, and closure of the vaginal canal by the LeFort's colpocleisis technic.

Vaginal hysterectomy often is the operation of choice because of the frequency of complete prolapse and the necessity of removal of diseased uterus. However, anatomically it is not the ideal operation for prolapse because it removes the upper cervical segment and its cardinal ligament attachments, which offer the best support to the vaginal vault. The mortality of vaginal hysterectomy is about 1.5 per cent, its morbidity 50 per cent, and its curability of prolapse about 70 per cent.

The interposition operation is most useful in this group in the cure of cystocele and mild prolapse. Here the pubocervical fascia has been greatly strained and the interposition of the fundus under the bladder gives excellent support. The fundus must be of suitable size to fit into the pubic arch and the presence of fundal disease must be eliminated. Thorough mobilization of the bladder is essential to prevent lateral sulci in the bladder and subsequent residual urine. The curability of cystocele and mild prolapse by this operation should be approximately 90 per cent, with no mortality. The interposition procedure can be combined with the Manchester parametrial fixation when the cystocele is large and prolapse is marked.

The Manchester parametrial fixation procedure is the best suited of all operations for prolapse. It simply shortens the relaxed cardinal ligaments (parametrial fascia) by pulling and uniting them anterior to the upper segment of the cervix. This elevates the uterus and vagina into their normal positions by pushing the cervix backward and the corpus forward. Usually the cervix is amputated to remove diseased tissue and to shorten it as a leverage arm. It combines easily with the interposition operation or the LeFort colpocleisis procedure when their indications are present. In selected cases its curability for prolapse is approximately 98 per cent and its mortality nil.

LeFort's colpocleisis operation is useful when there is a marked prolapse of the vagina with or without the uterus. It is essentially a folding in and closing of the vaginal canal by stripping rectangular areas of anterior and posterior vaginal mucosa and uniting the cut edges. Its selection must preclude the possibility of further coitus. It is easily done under local anesthesia and gives a high per cent of relief. It is most suited to aged and weaker women who can not tolerate pessaries and other type of plastics.

All of the plastics here discussed are suitable for local anesthesia and are accompanied by little or no shock.

In the seventh and eighth decade of life the incidence of tumor is on the decline. Usually they are primary and slow growing. Fibroma and lipoma are the only common benign tumors seen. Surgical removal is all that is necessary.

Epithelioma of the vulva is the most common malignant lesion of this age group. In a high percentage of cases it follows or co-exists with leukoplakia. The labia majora and the glans clitoris are the most frequent sites. Cell differentiation is advanced and anaplasia is not marked. Hence its response to irradiation is poor. Surgery offers the best hope of cure. Basset's two-stage operation is the most satisfactory procedure. In the first stage, complete resection of the inguinal glands is done; and vulvectomy with excision of the lesion itself constitutes the second stage. Taussig reports 81.8 per cent of five-year cures by this method. Other operators report from 35 to 45 per cent curability for five years. Irradiation is regarded only as a palliative measure in the treatment of carcinoma of the vulva. Curability of carcinoma of the clitoris is very low. The same is true of carcinoma of Bartholin's glands and the urethra.

Sarcoma, teratoma, and melanoma of the vulva are rare. They are highly malignant and seldom cured by any method of therapy.

Carcinoma of the vagina or uterus in elderly woman are much the same as carcinoma of the vagina or uterus in younger woman except that their progress is slower. Treatment and results are about the same.

Leukoplakia and kraurosis, though not tumors, deserve consideration because of their frequent relation to carcinoma either as a precancerous lesion or as co-existing lesions. Many regard leukoplakia as an advanced state of the same process causing senile vaginitis. It does not respond to hormone therapy and x-ray is of little value. This lesion is best managed by complete excision.

Summary

Pyuria, senile vaginitis, prolapsus uteri, and tumors of the external genitalia and vulva are the common gynecologic problems encountered in elderly women.

For pyuria without hematuria the conservative therapy of rest, heat, diet, and urinary antiseptics is advocated.

In senile vaginitis we must search for a causative lesion or fungus growth and eradicate. When the cause is undetermined stimulation of metabolism of the vaginal mucosa is needed. This is best done by vitamin A administration, high vitamin diet, and daily vaginal insertion of tablets containing acidified glycogen.

The type of uterine prolapse and what the injury of the supporting structures dictate the choice of operative procedure. Four operations are suitable for correction of prolapse, namely: vaginal hysterectomy, the Watkins interposition operation, the Manchester parametrial fixation operation, and LeFort's colpocleisis. Often a combination of two procedures or a composite operation is the most efficacious. Nearly all women can undergo a vaginal plastic operation and more should have the advantages of it.

Tumors of the vulva and external genitalia make up the greater number seen in this group. Usually they are slow growing and well differentiated. Epithelioma of the vulva is the most common and the most favorable to excision. Surgery is the treatment of choice.

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TORSION OF THE OMENTUM

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TORSION of the greater omentum is a relatively uncommon occurrence. Mauclaire[1] credits the first description of the disease to Bierre de Marchette in 1851. In 1939 Hederstad[2] was able to collect from the literature over two hundred reported cases, 40 per cent of which occurred irrespective of other existing diseases.

Torsions have been divided into two groups. In the primary, there is no associated pathologic process. The secondary type is most often seen with an incarcerated hernia. The contents of the sac are usually the omentum which may have become twisted. Many other pathologic processes may be associated in the secondary group. Due to the function of the omentum, it may be involved in inflammatory reactoins or become closely attached to other abdominal viscera as a protective mechanism.

In 1912 Payr[3] classified torsion of the omentum under two main groups:

A. Without hernia:
   1. Simple torsion of the omentum alone.
   2. Complicated torsion by adherence of the omentum.

B. With hernia:
   1. Intra-abdominal torsion without symptoms from hernia.
   2. Intra-abdominal torsion with previous inflammatory changes.
   3. Torsion entirely in the sac.
   4. Torsion with part in sac and part above.

The etiologic factors are grouped as predisposing or exciting. There are, however, certain basic conditions which may presumably predispose to the formation of such a process. It is evident that definite causes can not be ascribed to all cases. Borsky[4] and Davis[5] have suggested the following causes of this condition.

I. Anatomic abnormalities of the omentum:
   1. Bifid omentum.
   2. Long pedicle.
   3. Narrow attachment of pedicle.
   4. Large omentum.
   5. Increase in bulk of distal portion.
   6. Abnormal disproportion of sides.
   7. Type of attachments at stomach and transverse colon.

II. Associated congenital abnormalities of other organs.

III. Obesity.

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IV. Previous inflammatory changes with or without adhesions.

V. Interference with lymph flow.

VI. Abdominal tumors.

VII. Arrangement of arteries and veins.

The exciting causes may be due to: (1) sudden trauma, (2) sudden changes in body position, (3) straining, (4) violent exercise, (5) abnormal peristalsis in certain diseases, primarily of an inflammatory nature.

The signs and symptoms are, for the most part, consistent with those of acute abdominal inflammation. In the reported cases, the diagnosis of appendicitis was preoperatively made in 95 per cent of instances. An attempt has been made by Andrews[6] to differentiate the two conditions. There is, as yet, insufficient evidence to differentiate accurately between these processes preoperatively.

There are no characteristic symptoms to justify the diagnosis of torsion of the omentum in the presence of associated diseases. That is, in the presence of a strangulated or incarcerated hernia, evidence is usually inadequate to justify the diagnosis of this additional condition.

The prognosis in the primary group is satisfactory, provided early operation is performed. In the secondary type, the prognosis is dependent on the nature of the associated disease.

The following cases are presented to show the extent and variations to which a torsion may progress:

Report of Cases

Case 1. W. E., a negro male, aged 29, was admitted to the Emory Division of Grady Hospital, Sept. 26, 1940, complaining of pain in the abdomen. The patient had been operated on July 2, 1939, for a gun shot wound of the abdomen. Three perforations of the ileum and two of the descending colon were closed. From this he had made an uneventful recovery. He was then well until late in August, 1940, when the bowel movements became scant. On September 24 abdominal cramps began which were soon followed by vomiting. These continued until entrance in the hospital.

Physical examination was negative except for a slightly distended and tender abdomen. The peristalsis was hyperactive. Diagnosis at this time was acute intestinal obstruction, and operation was performed soon after admission. On opening the abdomen, numerous loops of small intestine were distended, and the abdominal cavity contained straw-colored fluid. It was found that the omentum was bifid. The point of division extended almost to the transverse colon. This right portion had twisted upon itself and gangrene had occurred distal to this point. The twisted omentum was found passing through a defect in the mesentery of the small intestine about 12 inches above the ileocecal junction. It had thus wrapped itself around this segment of the terminal ileum and an adjoining loop of small intestine, and produced complete intesti-

nal obstruction. The viability of the intestine was apparently unimpaired. The gangrenous portion of the omentum was ligated and excised, which completely relieved the obstruction. The patient had an uneventful postoperative course, and was dismissed on Nov. 9, 1940.

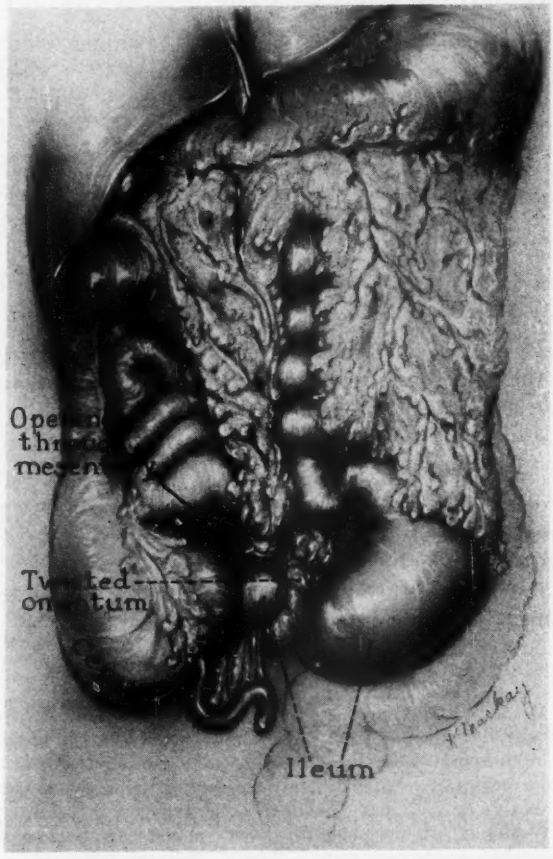

Fig. 1. Drawing showing bifid omentum which had become twisted and entered defect in mesentery, and then obstructed terminal ileum. (Case 1).

CASE 2.—Mrs. J. B. J., aged 57, was admitted to the Emory University Hospital Sept. 5, 1940. On September 4, the patient had begun to complain of generalized abdominal pain. This soon radiated to the right lower quadrant and remained there until admission to the hospital. Soon after the onset of the pain, the patient became nauseated and vomited several times. There was no history of previous abdominal pain similar to the present. The past history was irrelevant.

There was marked tenderness over the entire abdomen with the point of maximum intensity to the right of and below the umbilicus. Moderate muscle

spasm was present, most marked in the right lower quadrant. No masses could be felt. Pelvic and rectal examinations were negative.

The leukocyte count revealed a total of 13,800 white cells, 91 per cent of which were polymorphonuclears. The urinalysis was essentially negative. The provisional diagnosis was acute appendicitis and immediate operation was performed.

Fig. 2. Drawing of resected omentum showing site of torsion. (Case 2).

Under gas-ether anesthesia, the abdomen was opened through a McBurney incision. There was a small quantity of peritoneal blood-tinged fluid. The appendix was delivered and found to be normal. A movable mass was felt just above and to the left of the cecum. It was found to be the greater omentum, which had become twisted at right angle to its long axis. The torsion occurred one inch distal to its attachment to the transverse colon. The direction of the torsion was counter-clockwise for about three-fourths of the circumference. Below the torsion, the omentum was hemorrhagic and gangrenous. The omentum was excised proximal to the point of twisting. Following the operation convalescence was uninterrupted. Microscopic examination of the excised tissue revealed an engorgement of the vessels, and extravasation of red blood cells, but no evidence of new growth.

CASE 3.—A negro woman, aged 61, was brought to the Emory Division of Grady Hospital, Sept. 20, 1940, in coma. This patient had a history of chronic asthma and hypertensive heart disease for several years. In November,

1939, in the out-patient department a small movable nodule, directly in the midline, 4 cm. below the xiphoid process had been noted. X-ray examination had revealed diverticula of the sigmoid colon.

Three days before admission, after eating her evening meal (which had consisted primarily of canned salmon), she suddenly became ill with cramps in the abdomen, associated with extreme nausea, vomiting and diarrhea. After admission to the hospital, her condition became worse and death occurred before satisfactory examinations could be made.

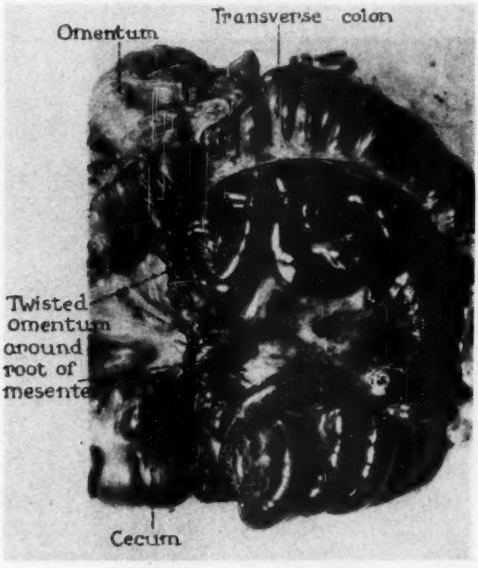

Fig. 3. Retouched photograph showing twisted omentum encircling root of mesentery and producing gangrene of entire small intestines. (Case 3).

Autopsy was limited to the abdominal cavity. The mucosa of the dilated stomach was intensely congested. No petechiae were noted and no ulcerations were present. The duodenum was also dilated and contained fluid. From the junction of the duodenum and jejunum to the ileocecal valve, the root of the mesentery was tightly constricted by a fold of omentum. The omentum had previously become twisted upon itself before constricting the mesentery. After this encircled the mesentery, it formed a lateral slip knot which occluded the blood supply of the entire jejunum and ileum. This was demonstrated by a purple discoloration of the enclosed loops of small intestines. There was complete obstruction at both the proximal jejunal and distal ileal ends of the intestine. The mesentery of the jejunum and ileum was also gangrenous. Death was attributed to a massive gangrene of the small intestine with obstruction.

Discussion

Among the many causes of acute abdominal symptoms must be included diseases of the omentum. The nature of the greater omen-

tum permits association with practically all inflammatory diseases of the abdomen. Extreme mobility and migratory power allow for the variations in size, shape and position. This in a great measure accounts for the occurrence of the clinical entities herein described. The possible etiologic factors are not definitely known. In the primary torsions, it is probably not feasible to ascertain either the predisposing or exciting causes. The preoperative diagnoses of torsion of omentum may never be accurately made, due to the associated or exciting pathologic factors. In all instances, symptoms are usually those of some acute inflammatory process, intestinal obstruction, or thrombosis of the blood vessels of the viscera.

Therapy in torsion of the omentum should always be surgical before complicating features develop.

SUMMARY

Three cases of torsion of the greater omentum are reported. Two were operated upon with complete recovery. One was discovered at post mortem examination.

In no instance was a preoperative diagnosis of the condition made.

The mechanical intestinal obstruction was seen in two instances. The earliest case seen was apparently primary with no association or disturbance in function of adjacent organs.

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THE RELATION OF ALLERGY TO SURGICAL DIAGNOSIS IN DISEASES OF THE GASTRO-INTESTINAL TRACT

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OCCASIONALLY, before surgery can be contemplated, allergy must be considered in the differential diagnosis. Unfortunately the allergist's consultation is not always helpful, particularly when it adds only a confused answer of indefinite skin tests and a plea for weeks of observation and trial diets. There are instances however, when the allergist may be of definite assistance.

Many surgeons through experience and skilled diagnostic acumen or perhaps through some intuitive sense recognize allergic conditions, or in such cases are cognizant of a deviation from classic abnormality. It is these atypical conditions; the vague colic, the evanescent edema, the unexplainable shift of the differential blood count, the family or personal history of minor or major allergies, which must be considered lest they lead to surgical error.

Regardless of allergy, in no case of a suspected acute condition of the abdomen should proper surgical intervention be delayed if the condition is ordinarily amenable to surgical treatment, and if in such instances postponement might be hazardous. The many lives saved by surgical expediency more than justify the infrequent laparotomy which might have been avoided by a more complete study.

In the more chronic conditions however, when adequate study and investigation is possible the consideration of allergy in the syndrome might help to lower the so-called "unknown surgical mortality."

The allergic surgical patient may be (1) an allergic individual with unrelated gastrointestinal symptoms, (2) a patient with a major allergy such as asthma and a related secondary allergy which might be gastrointestinal and (3) a patient whose gastrointestinal symptoms are entirely due to allergy.

In the first instance the surgeon must concern himself with possible sensitivity to local or general anesthesia, the use of drugs and serum and particularly materials which might be given intravenously. C. B. Bohner at the 1940 meeting of the American Association for the Study of Allergy reported several fatalities from allergy to acacia given for emergency transfusion. He stressed that printers

and men in other occupations with exposure to acacia should be skin tested before such material is used.

The second instance where the patient has both a major allergy and a related allergy which might be gastrointestinal, constitutes probably the largest group of allergic surgical patients. While in general, gastrointestinal or food allergy is most prominent in children under two years of age, and the child loses his food sensitivity around the time of puberty, Warren Vaughan in the 1939 edition of his book, *Practice of Allergy,* calls attention to the fact that adults do not lose their food sensitivity to as great an extent as is ordinarily considered. He states,

> In the adult with asthma or vasomotor rhinitis an inhalant allergen is usually found to be the primary etiologic agent. At the same time such a patient is usually found by test to be atopic to quite a variety of foods, and best therapeutic results follow the avoidance of not only the inhalant factors, but also the ingestants. When we are dealing with inhalant allergens in an adult, this may overshadow the food allergy, but the food sensitization may persist nonetheless.

I have observed an appreciable number of adults who maintain their food sensitivity throughout life. I recall particularly an asthmatic gentleman in his seventies who refused to accept dinner invitations away from his home because the smallest amount of egg in any food he ingested would make him violently ill. He had been tested so frequently by well-meaning friends who accused him of exercising a too vivid imagination that he grew rather wary of them. In one instance, drinking a glass of lemonade caused him to have nausea and diarrhea in less than thirty minutes. On investigation, it was found that egg white had been added to the lemonade by the fountain clerk.

Another patient in his forties suffered from mucous colitis and cultured milk in large quantities was prescribed. He lost so much weight that he was admitted to a tuberculosis sanatorium with the presumptive diagnosis of tuberculous enteritis. At the sanatorium he consumed large amounts of milk plus a high calorie diet, but continued to lose weight. A routine allergy examination showed a positive scratch test to milk and further study proved that elimination of this food in his diet caused him to gain over 70 pounds in weight and the condition of his colon returned to normal.

Now to consider the third supposition, that of the patient whose gastrointestinal symptoms are entirely due to allergy. Certainly in children the possibility of allergy is more likely than in adults. The principal allergic symptoms in infancy are eczema, and such gastrointestinal complaints as colic, abdominal pain, vomiting, gas and

diarrhea. Vomiting is often persistent and may be projectile, as in pylorospasm. Relief may follow the elimination of such ordinary foods as milk, egg, cereals, chocolate, fruit juice, fish oils, or of other foods or drugs that are responsible.

Balyeat in his book, *Allergic Diseases, Their Diagnosis and Treatment* (fourth edition), states that in his experience and in that of Rowe, Vaughan, and Gay, it is not uncommon to find patients with gastrointestinal symptoms due to food sensitization who not only have no other allergic manifestations themselves, but have no family history of allergic diseases. He further states that while it is impossible to say that any syndrome is diagnostic of an allergic condition of the alimentary tract, there are several symptoms which should make one suspect such a condition. These symptoms are described as discomfort varying from a sense of fulness after meals to abdominal colic so severe as to simulate a surgical condition of the abdomen. Usually a sense of burning in the epigastrum is complained of following meals and relieved when the stomach is empty. Nausea, vomiting, and diarrhea may occur soon after the ingestion of the guilty food or drug and later the colon may show inflammation and increased mucous secretion. These symptoms may be accompanied by other allergic manifestations such as urticaria, angioneurotic edema or asthma.

Rarely the symptoms may resemble acute anaphylactic shock and be accompanied by violent vomiting, diarrhea, with or without blood, distressing abdominal cramps, and even death from circulatory collapse might occur.

Again food allergy may mimic the symptoms of peptic ulcer, gallbladder disease, appendicitis, or in fact practically every intra-abdominal surgical condition. M. Walzer at the 1940 meeting of the American Medical Association exhibited his ability passively to sensitize the colon of a monkey to peanuts and to produce marked local reaction in these tissues by the ingestion or local application of a peanut extract to the sensitized areas.

Alvarez has reported that the great majority of patients seen at the Mayo Clinic who complain of gastrointestinal symptoms do not have organic disease of the digestive tract. He has noted that patients find their symptoms aggravated most frequently by foods which are highly allergenic. Alvarez has repeatedly emphasized the importance of the involuntary nervous system in the production of bizarre digestive symptoms. Between psychotic, neurotic, and allergic patients complaining of gastric disturbances, indeed the surgeon need be almost an intellectual terpsichorean safely to fathom his patients' complaints.

Similarly, non-specific therapy in the diagnosis and treatment of these diseases whether allergic or non-allergic are difficult to evaluate. Such products as peptones, urinary proteose, typhoid vaccine, autohemotherapy, histamine and such proprietary remedies as larastodine, and torantil in general, have been inefficacious. The latter drug also known as histaminase, while capable of neutralizing histamine hydrochloride under certain laboratory conditions, does not at all neutralize the so-called H-substance of Lewis, or in fact (in my experience) prove of merit in the treatment of any of the allergic diseases. The whole field of pharmacology dealing with the adrenalergic and cholenergic group of drugs and their respective influence on the sympathetic and parasympathetic nervous systems deserves increasing appreciation.

J. Warrick Thomas and R. John Renshaw at the recent meeting of the Southern Medical Association suggested a novel method of testing the rectal mucosa by means of food allergens. This method requiring proctoscopic observation is tedious and time consuming but probably could be utilized advantageously in selected cases.

B. S. Kline, of Cleveland has shown surprising accuracy in his diagnosis of allergy in pathologic tissues. He was able to demonstrate both reversible and irreversible types of allergy in various tissues such as the liver, spleen, appendix, lungs, and other organs.

Milton Cohen and the late T. Wingate Todd of the same city showed the significance of developmental growth studies in the evaluation of clinical allergy. They showed rather conclusively that children suffering particularly from gastrointestinal allergy developed much more slowly than normal children and that improvement in their allergic condition could be demonstrated by the improvement of their general metabolism and the disappearance of characteristic bone markings.

Probably we should begin to think of allergy as another type of inflammation to be added to the classic signs of "rubor, dolor, calor, tumor." More adequate recognition by the pathologist of this allergic tissue response and a correlation of his findings with the clinical symptoms will be necessary before the maximum aid can be expected from the allergist.

Surgery is an old science, allergy a comparatively new one. The allergist now can be of help to the surgeon in recognizing some of the unusual intra-abdominal conditions. Allergy is a growing science and the newer and accumulating information should increasingly add to the better understanding of gastrointestinal disease.

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WHEN A DOCTOR COMPLETES HIS MEDICAL EDUCATION HE SHOULD RETIRE

During the past quarter century medical education has made its most rapid advancement. Also during this same period of time postgraduate study has received more and more emphasis, both by medical educators and the medical profession. No longer are progressive doctors content to treat the sick as they were taught even ten years ago. They recognize the fact that medical science is a progressive science and that they are yet students.

Twelve years ago The Southeastern Surgical Congress was organized and dedicated to the task of providing the surgeons of the Southeast an opportunity to engage in postgraduate study. Three objectives were sought by the founders of this Congress:

1. To cooperate with medical schools and other medical and surgical organizations and hospitals.

2. To provide for those who wish to keep abreast of surgical progress an opportunity to attend and participate in postgraduate lecture courses, here in the Southeast.

3. To offer to those surgeons who are sufficiently ambitious an opportunity to be placed on the programs; to encourage them to write papers; and to publish their contributions.

All of these objectives have been assiduously emphasized year after year. The surgical leaders of the country readily grasped the significance of this undertaking and have contributed their time and energy freely. The lecture courses have been more successful than even the founders of the Congress anticipated.

Places on the programs have been assigned to those members of the Congress who have been sufficiently ambitious to impress the program committee with their sincerity in doing a good job and their ability to do it. An equal number of guest speakers are selected from the different sections of the country, thus concentrating the very latest in surgery from this territory and the rest of the country into a three day postgraduate lecture course.

Many surgeons in the Southeast have made valuable contributions to surgery. They have recorded their work and thus made richer the surgical literature.

Through the annual postgraduate assemblies and state clinical conferences, this section of the country has been recognized as a pioneer section in postgraduate surgical study.

"We must continue to go to school if we would nourish our education."

B. T. BEASLEY, M. D.

PASS IN REVIEW

That phrase was very familiar to the ears of the young men of America in 1917 and 1918. It is probably in process of becoming familiar to millions more. Or is the streamlining of the Army making no provision for the afternoon parade? Personally we have an idea that we shall find out all too soon. Even if it is out of date however, it provides a convenient text,—

In December, 1939, Dr. R. L. Sanders, then President of The Southeastern Surgical Congress, announced that THE SOUTHERN SURGEON *must* appear monthly. His enthusiasm was so contagious that the Executive Council carried his wishes into effect immediately and the Editor had to get busy sure enough. Whatever qualms the Managing Editor may have experienced were quickly allayed when Fellows of the Congress entered subscriptions for a number of their friends and when Dr. Sanders was able to show the Texas Surgical Society that this journal was their logical official organ. THE SOUTHERN SURGEON therefore, after appearing on the first day of fifteen consecutive months, is more securely in the black than it has ever been!

The last twelve issues of the SURGEON have contained three times as many pages as it did in its first year of publication back in 1932. They have carried 97 scientific papers (in addition to essays dealing with other subjects, not to mention editorials) from twenty-two States, Canada and Panama. Understandably, Texas led with 18 papers. Tennessee and Georgia tied for second place with

13 and Kentucky placed with 10. The other eight States in the territory of the Congress, New York, Minnesota, Pennsylvania, Michigan, Ohio, Missouri, Maryland, Illinois, Wisconsin and Washington contributed the balance. We regret that eighteen States in which we have subscribers did not send in any acceptable articles, nor did those eight unfortunate States who do not receive the SURGEON.

The job of getting out a monthly journal proving too great for two men who depend on the practice of medicine for their livelihoods, it was necessary to call for help. Dr. Walter G. Stuck, of San Antonio, was appointed Associate Editor to take charge of the work in Texas, and a bit later, Dr. H. Earle Conwell, of Birmingham, and Dr. J. Duffy Hancock, of Louisville, were also made Associates. These men have already done much more than lighten the duties of the Atlanta office.

The past year has not fulfilled all of our expectations. The excitement of the Presidential election and the repercussions of World War II, it would seem, have produced writer's palsy in many of our expected contributors and our editorial selves have found that they made it very hard to stick to our knitting. However, the splendid papers scheduled to be read in Richmond assure us that for months ahead THE SOUTHERN SURGEON will be well supplied with good material and these days one can't worry about what may happen next fall.

Unsettled conditions have also interfered with the pocketbook nerve of many of our expected advertisers. We look for the day when many manufacturers of surgical equipment, hospital supplies and hormones and other pharmaceuticals—in short of everything the surgeon uses (perhaps even including cigarettes and soft drinks)—will realize that these pages offer for the ethical company a superlative opportunity to appeal to the surgeons between the Potomac and the Rio Grande, between the Ohio and the Florida Keys. When that day arrives we expect to increase the size of the journal.

THE SOUTHERN SURGEON then faces the future confident and unafraid.

BOOK REVIEWS

The Editors of THE SOUTHERN SURGEON *will at all times welcome new books in the field of surgery and will acknowledge their receipt in these pages. The Editors do not, however, agree to review all books that have been submitted without solicitation.*

THE ROLE OF THE LIVER IN SURGERY. By FREDERICK FITZHERBERT BOYCE, B. S., M. D., Diplomate of the American Board of Surgery, Fellow of the American College of Surgeons. Visiting Surgeon: Charity Hospital of Louisiana at New Orleans, French Hospital, Mercy Hospital, Hotel Dieu, Southern Baptist Hospital and Touro Infirmary. 365 pages, with 44 illustrations, and 25 tables. Price, $5. Springfield and Baltimore: Charles C Thomas, Publisher, 1940.

Seventeen years ago George Gordon Heyd began to emphasize the importance of the hepatic factor in the mortality accompanying surgery of the biliary tract. More recently, through attention to the state of the liver Graham has reduced his mortality for cholecystectomy from 6 to 0.5 per cent, and for common duct stone from 7.7 to 2.0 per cent. Other surgeons who have had routine tests of liver function before operation have reduced almost as strikingly the mortality following removal of the gallbladder. The liver then has been recognized as a subject of vital importance to surgeons operating for disease of the gallbladder or common duct. It has not been so well recognized as a factor in causing death following other surgical procedures, such as thyroidectomy.

The necessity for routine investigation of the liver, as well as of the heart, lungs and kidneys, in patients confronted with major surgery is the thesis of this work by Frederick Fitzherbert Boyce. Dr. Boyce is no stranger to readers of THE SOUTHERN SURGEON. To it he has contributed several papers in recent years, and for the January number he wrote the leading editorial, entitled by the way, "The Role of the Liver in Surgery." These samples should whet the appetite of our readers for his opus major.

This scholarly book has apparently covered everything of importance about the pathologic physiology of the liver up to the time it was first written and even gives a bibliography of later writings. The author has not contented himself with his exhaustive review of the literature. He has carried out much experimental work, and has investigated the function of the liver not only in patients with disease of the biliary tract and with hyperthyroidism, but also, as controls, in robust young men undergoing appendectomy or hernioplasty. The control series establishes that even when liver function is normal preoperatively it is depressed by a major operation. He argues therefore that this lessening of an already lessened reserve causes many deaths. Fortunately he is able to show that it can usually be improved by preoperative treatment. Boyce has too made postmortem studies in many cases. He has advanced the knowledge of the largest organ in the body.

For this monograph Dr. Boyce was awarded the Quinquennial Samuel D. Gross Prize. In 1935, you will remember the Gross Prize was given O. H. Wangensteen for *A Physiological and Clinical Consideration: The Therapeutic Problem in Bowel Obstruction.* The Editor of the SURGEON prophesies that *The Role of the Liver in Surgery* will become equally famous. And, while he is about it, he would like to lay claim to a godfatherly interest in its being published in its final form.

ELECTROCARDIOGRAPHY IN PRACTICE. By ASHTON GRAYBIEL, M. D., Instructor in Medicine, Courses for Graduates, Harvard Medical School; Research Associate, Fatigue Laboratory, Harvard University; Assistant in Medicine, Massachusetts General Hospital, and PAUL D. WHITE, M. D., Lecturer in Medicine, Harvard Medical School; Physician, Massachusetts General Hospital, in Charge of the Cardiac Clinics and Laboratory. 319 pages, with 272 illustrations. Price, $6. Philadelphia and London: W. B. Saunders Company, 1941.

It is a pleasure to acclaim this splendidly gotten up book that is the answer to the clinician's prayer in this day when even the patient is demanding an electrocardiogram almost as insistently as he demands a determination of his blood pressure. It bears the stamp of authority of one who is in this reviewer's opinion the tops.

In this newest book in its field, no less than 272 electrocardiograms are presented clearly in black and white without reduction in size. Each of these is printed on the right hand page facing a brief clinical history and an interpretation of the tracing on the left. The unusual shape of the book permits the reproduction of two or three cardiograms on a page, but it also permits longer strips of a single tracing if they are needed.

The book opens with a discussion of the many normal variations which are more often misinterpreted as evidence of disease than are real abnormalities overlooked: one notes that many of the normals are taken from young aviators. The second section presents in orderly fashion electrocardiograms characteristic of the various conditions that can be diagnosed by this means. In the latter half of the book tracings are presented according to no plan so that, by covering the left hand page, the student can make his own independent interpretation to compare later with that of the authors. The volume can thus be made the equivalent of a course of study in Boston without the trouble or expense of leaving one's own office.

THE YEAR BOOK OF INDUSTRIAL AND ORTHOPAEDIC SURGERY. Edited by CHARLES F. PAINTER, M. D. Price, $3. Chicago: The Year Book Publishers, 1940.

This first edition is a unique contribution to the literature of industrial and orthopedic surgery. It presents the most significant articles on such subjects that appeared in journals and special publications here and abroad during the past year. For general reading or quick reference this new volume presents a maximum of information in a minimum of time. There are 279 articles with 299 illustrations.

Dr. Painter, as editor, has presented this volume in a very efficient manner. Traumatic and orthopedic surgery have probably made more progress in the last ten years than any previous decade, due mainly, to the demand which has been made upon both by the frequent and increasing injuries and the complications thereof. The traumatic and orthopedic surgeons who keep in touch with recent literature will find much benefit in this book. It is highly recommended to every surgeon who is doing any orthopedic or traumatic work. The book is a valuable edition to the group of Year Books.

H. EARLE CONWELL, M. D.